The Road Inventory of Harris Neck National Wildlife Refuge

Townsend, GA

Prepared By:
Federal Highway Administration
Central Federal Lands Highway Division
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INTRODUCTION

The Transportation Equity Act for the 21st Century (Public Law 105-178) created the Refuge Roads Program. Refuge roads are those public roads that provide access to or within a unit of the National Wildlife Refuge System and for which title and maintenance responsibility is vested in the United States Government. Funds from the Highway Trust Fund are available for refuge roads and can be used by the station to pay the cost of:

(a) Maintenance and improvements of refuge roads.
(b) Maintenance and improvements of:
    (1) Adjacent vehicle parking areas
    (2) Provision for pedestrians and bicycles and
    (3) Construction and reconstruction of roadside rest areas that are located in or adjacent to wildlife refuges
(c) Administrative costs associated with such maintenance and improvements.

The funds available for refuge roads are to be disbursed based on the relative needs of the various refuges in the National Wildlife Refuge System, and taking into consideration:

(a) The comprehensive conservation plan for each refuge;
(b) The need for access as identified through land use planning; and
(c) The impact of land use planning on existing transportation facilities.

To determine the relative needs of the U.S. Fish and Wildlife Service, the Federal Highway Administration (FHWA) was asked to inventory all public access roads and parking lots and provide a condition assessment of each. In 2008 the inventory was expanded to include administrative (service use only) roads and parking lots. An FHWA representative meets with refuge personnel to identify route segments and assign route numbers and functional classifications (See Appendix) for each route. All roads and parking lots are mapped using Trimble GPS units and visually assessed for condition using the RSL method of evaluation developed at Utah State University (See Appendix). Culverts, Gates, Guardrails and Low Water Crossings are also mapped and inspected for any obvious defects.

An estimate is provided, in year 2008 dollars, based on the condition determined by the rating system. Estimates are based upon data and location factors from the 2008 RS Means Heavy Construction Cost Data 22nd Annual Edition. Cost estimates should be evaluated on a case-by-case basis when being used for programming purposes.

Native Surfaced roads and parking lots already inventoried will not be re-inventoried and will not appear individually in report chapters 5, 6 and 8. Mileages and areas of native surfaced roads and parking lots will still appear in all summaries in the report and will remain in the road inventory database. In addition to this report, the FHWA will furnish the condition ratings of each route and segment to the Fish and Wildlife Service in a Microsoft Access database so the data can be included in their Real Property Inventory.

Harris Neck

Summaries

Route Miles and Percentages by Functional Class and Condition

Condition Rating (Based on RSL)*

	Excellent		Good		Fair		Poor		Failed		TOTAL
F. C.	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
I	0.37	8.4%	0.15	3.5%	2.90	65.8%	0.98	22.3%	0.00	0.0%	4.41
II	0.47	28.8%	0.00	0.0%	1.06	64.9%	0.10	6.3%	0.00	0.0%	1.63
III	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.07	100.0%	0.00	0.0%	0.07
IV	0.00	0.0%	0.11	20.9%	0.42	79.1%	0.00	0.0%	0.00	0.0%	0.53
V	1.34	12.7%	8.14	77.1%	1.09	10.3%	0.00	0.0%	0.00	0.0%	10.57
Totals	**2.18**	**12.7%**	**8.41**	**48.9%**	**5.47**	**31.8%**	**1.15**	**6.7%**	**0.00**	**0.0%**	**17.21**

*For a description of condition ratings for the various surface types see the Appendix.

Route Miles and Percentages by Surface Type and Condition

Paved Condition Rating [Condition(RSL)]

	Excellent		Good		Fair		Poor		Failed		TOTAL
Surface	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
AS	0.84	11.3%	0.00	0.0%	5.47	73.3%	1.15	15.5%	0.00	0.0%	7.47
CO	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00
Totals	**0.84**	**11.3%**	**0.00**	**0.0%**	**5.47**	**73.3%**	**1.15**	**15.5%**	**0.00**	**0.0%**	**7.47**

Unpaved Condition Rating [Condition(RSL)]

	Excellent		Good		Fair		Poor		Failed		TOTAL
Surface	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	MILES
GR	0.47	10.7%	3.94	89.3%	0.00	0.0%	0.00	0.0%	0.00	0.0%	4.41
NA	0.14	3.7%	3.52	96.3%	0.00	0.0%	0.00	0.0%	0.00	0.0%	3.66
PR	0.73	43.5%	0.95	56.5%	0.00	0.0%	0.00	0.0%	0.00	0.0%	1.68
Totals	1.34	**13.7%**	8.41	**86.3%**	0.00	**0.0%**	0.00	**0.0%**	0.00	**0.0%**	**9.75**

Square Footage (Parking Areas)

Condition Rating

	Excellent		Good		Fair		Poor		Failed		Total
	Square		Square		Square		Square		Square		Square
Surface	Feet	%	Feet	%	Feet	%	Feet	%	Feet	%	Feet
AS	3191	3.2%	14221	14.1%	76980	76.3%	6475	6.4%	0	0.0%	100867
CO	1461	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1461
GR	1377	4.5%	12672	41.0%	16888	54.6%	0	0.0%	0	0.0%	30937
NA	0	0.0%	85248	100.0%	0	0.0%	0	0.0%	0	0.0%	85248
PR	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0
Totals	**6029**	**2.8%**	**112141**	**51.3%**	**93868**	**43.0%**	**6475**	**3.0%**	**0**	**0.0%**	**218,513**

Harris Neck
Summaries

Route Miles and Percentages by Use Type and Condition

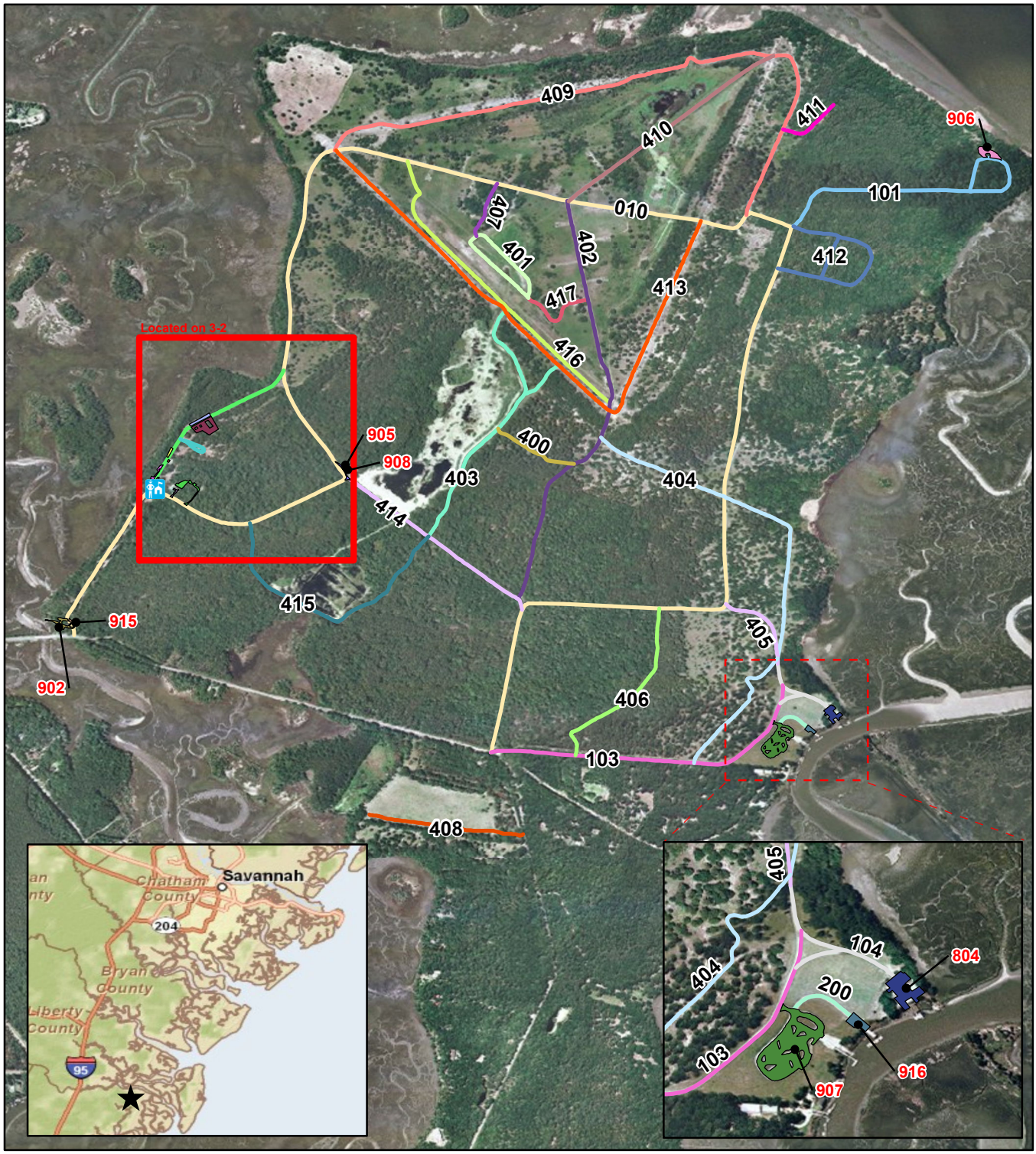
Road Condition Rating: Public/Administrative Use

USE TYPE	Excellent		Good		Fair		Poor		Failed		TOTAL MILES
	MILES	%	MILES	%	MILES	%	MILES	%	MILES	%	
Public (FC I-III)	0.84	13.8%	0.15	2.5%	3.96	64.8%	1.15	18.9%	0.00	0.0%	6.11
Admin (FC IV-V)	1.34	12.1%	8.25	74.4%	1.51	13.6%	0.00	0.0%	0.00	0.0%	11.10
Totals	**2.18**	**12.7%**	**8.41**	**48.9%**	**5.47**	**31.8%**	**1.15**	**6.7%**	**0.00**	**0.0%**	**17.21**

Parking Condition Rating: Public/Administrative Use

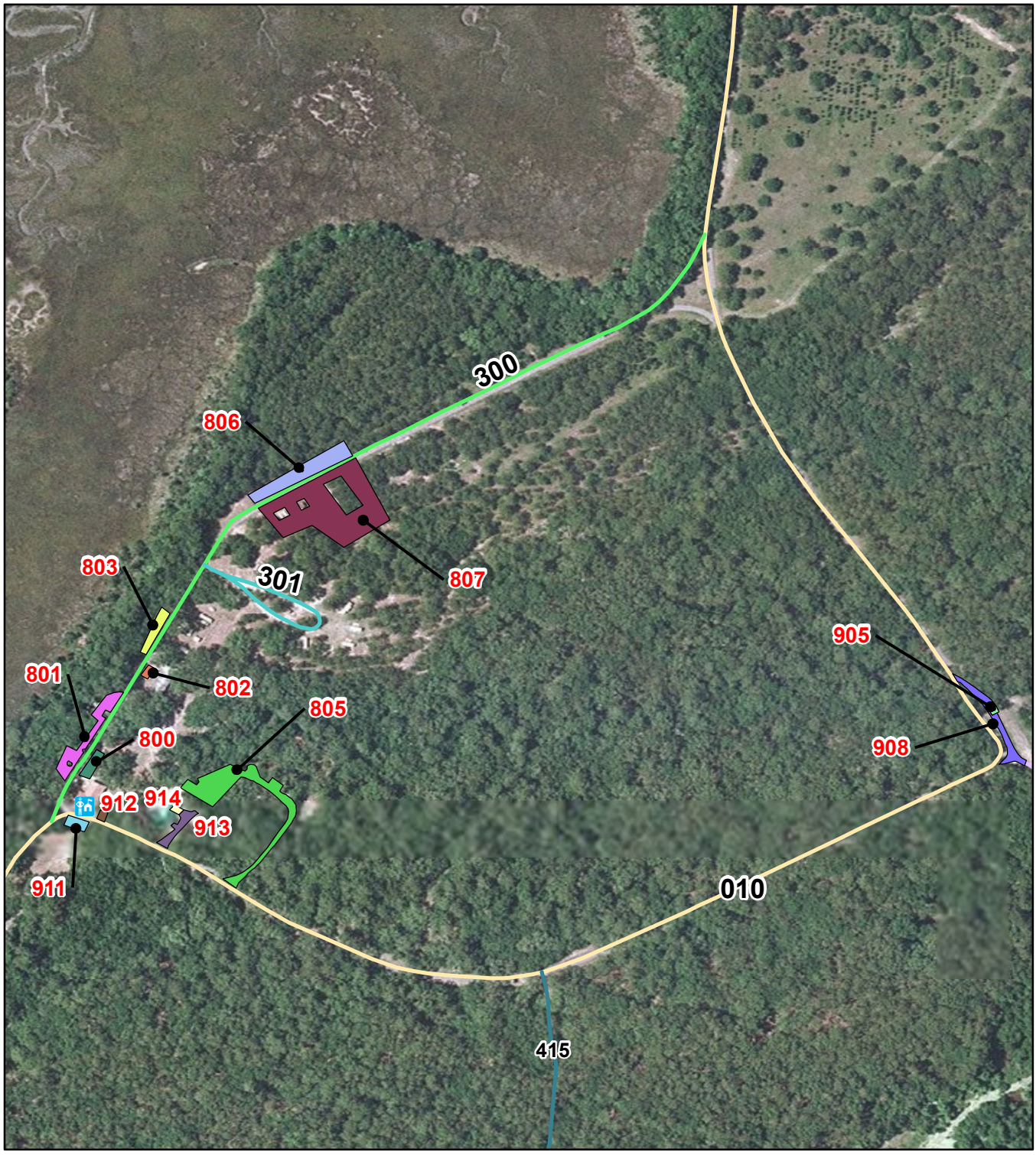
USE TYPE	Excellent		Good		Fair		Poor		Failed		Total Sq Ft
	Sq Ft	%	Sq Ft	%	Sq Ft	%	Sq Ft	%	Sq Ft	%	
Public	5406	4.1%	39337	30.1%	79311	60.8%	6475	5.0%	0	0.0%	130529
Admin	623	0.7%	72804	82.7%	14557	16.5%	0	0.0%	0	0.0%	87984
Totals	**6029**	**2.8%**	**112141**	**51.3%**	**93868**	**43.0%**	**6475**	**3.0%**	**0**	**0.0%**	**218,513**

Harris Neck National Wildlife Refuge
ROUTE LOCATION MAP



0 0.175 0.35 0.7 1.05 1.4 Miles

Harris Neck National Wildlife Refuge
ROUTE LOCATION MAP



Harris Neck National Wildlife Refuge - 41627
Route Identification List

Shading Color Key:

White = Paved Routes
Yellow = Unpaved Routes

RTE #	Asset Number	ROUTE NAME	RTE MI	ROUTE DESCRIPTION	PAVED MI	UN-PAVED MI	LANES	FC
010	10015049	Auto Tour Route	4.41	From Harris Neck Road (West) to Harris Neck Road (East)	4.26	0.15	2	1
101	10037386	Thomas Landing Road	0.70	From Auto Tour Route (Route 010) to end of loop	0.70	-	2	2
103	10037389	Barbour River Landing Road	0.72	From Harris Neck Road to Boat House Access Road (Route 104)	0.72	-	2	2
104	10037390	Boat House Access Road	0.22	From Barbour River Landing Road (Route 103) to Boat House Area Parking (Route 804)	0.22	-	1	2
200	-	Crabber's Dock Access Road	0.07	From Barbour River Landing Parking (Route 907) to Crabber's Dock Parking (Route 916)	0.07	-	2	3
300	10037385	HQ/VC Administrative Access Road	0.42	From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)	0.42	-	1	4
301	-	Volunteer RV Access Loop	0.11	From HQ/VC Administrative Access Road (Route 300) to end of loop	-	0.11	1	4
400	10015048	East Woody Pond Cut-Across Road	0.19	From East Woody Pond Road (Route 403) to Pumphouse Road (Route 402)	-	0.19	1	5
401	10061146	Snipe Interior Road	0.40	From East Snipe Exterior Road (Route 417) to East Snipe Exterior Road (Route 417)	-	0.40	1	5
402	10015048	Pumphouse Road	1.03	From Auto Tour Route (Route 010) to Woody Pond Road (Route 414)	-	1.03	1	5
403	10015048	East Woody Pond Road	0.73	From Woody Pond Road (Route 414) to South Airfield Perimeter Road (Route 413)	-	0.73	1	5
404	10015048	Powerline Road	1.10	From Pumphouse Road (Route 402) to Barbour River Landing Road (Route 103)	-	1.10	1	5
405	-	Gould Cemetery Access Road	0.21	From Boat House Road(Route 104) to Auto Tour Route (Route 010)	-	0.21	1	5
406	10015048	Southeast Cut-Across Road	0.44	From Auto Tour Route (Route 010) to Barbour River Landing Road (Route 103)	-	0.44	1	5
407	10061147	North Snipe Exterior Road	0.14	From Snipe Interior Road (Route 401) to Auto Tour Route (Route 010)	-	0.14	1	5
408	10015048	Lucas Tract Access Road	0.32	From Julieton Road to end of route near shed	-	0.32	1	5
409	-	North Airfield Road	1.41	From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)	-	1.41	1	5
410	10061153	Goose Pond Road	0.55	From Auto Tour Route (Route 010) to North Airfield Road (Route 409)	0.55	-	1	5
411	-	Bunker Road	0.14	From North Airfield Road (Route 409) to end of route near bunker	-	0.14	2	5
412	-	Bunting Loop Road	0.54	From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)	0.54	-	1	5
413	-	South Airfield Perimeter Road	1.36	From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)	-	1.36	1	5
414	10061127	Woody Pond Road	0.48	From Woody Pond Parking (Route 908) to Auto Tour Route (Route 010)	-	0.48	1	5
415	10061129	Bluebill Levee Road	0.62	From Woody Pond Road (Route 414) to Auto Tour Route (Route 010)	-	0.62	1	5
416	10061147	South Snipe Exterior Road	0.75	From Auto Tour Route (Route 010) to Pumphouse Road (Route 402)	-	0.75	1	5
417	10061147	East Snipe Exterior Road	0.18	From Pumphouse Road (Route 402) to Snipe Interior Road (Route 401)	-	0.18	1	5

* Route has more than one Asset Number

Harris Neck - 41627 - ROUTE IDENTIFICATION LIST (PARKING)

Shading Color Key:

White = Paved Parking Lots
Green = Unpaved Parking Lots

RTE #	Asset Number	ROUTE NAME	RTE SQFT	ROUTE DESCRIPTION	PAVED SQFT	UNPAVED SQFT
800	10054748	Headquarters Staff Parking	1,798		0	1,798
801		Shop Parking	6,155		0	6,155
802	10037393	East LE Quarters Parking	623		623	0
803	10037394	West LE Quarters Parking	2,555		0	2,555
804		Boat House Area Parking	21,567		0	21,567
805		Ecological Services Office Employee Parking	14,557		0	14,557
806		East Maintenance Parking	9,150		0	9,150
807		West Maintenance Parking	31,579		0	31,579
902	10037395	Entrance Boat Ramp Parking	14,221		14,221	0
905	10037397	Woody Pond Handicapped Parking	345		345	0
906	10037398	Thomas Landing Parking	20,397		0	20,397
907	10015055	Barbour River Landing Parking	76,980		76,980	0
908	10037400	Woody Pond Parking	4,719		0	4,719
911	10054747	HQ/VC Parking	1,377		0	1,377
912	10054747	HQ/VC Handicapped Parking	493		493	0
913		Ecological Services Office Public Parking	2,331		0	2,331
914		Ecological Services Office Handicapped Parking	430		430	0
915	10037395	Entrance Kiosk Parking	2,761		2,761	0
916		Crabber's Dock Parking	6,475		6,475	0

CHANGES TO THE FISH AND WILDLIFE SERVICE ROAD INVENTORY REPORT

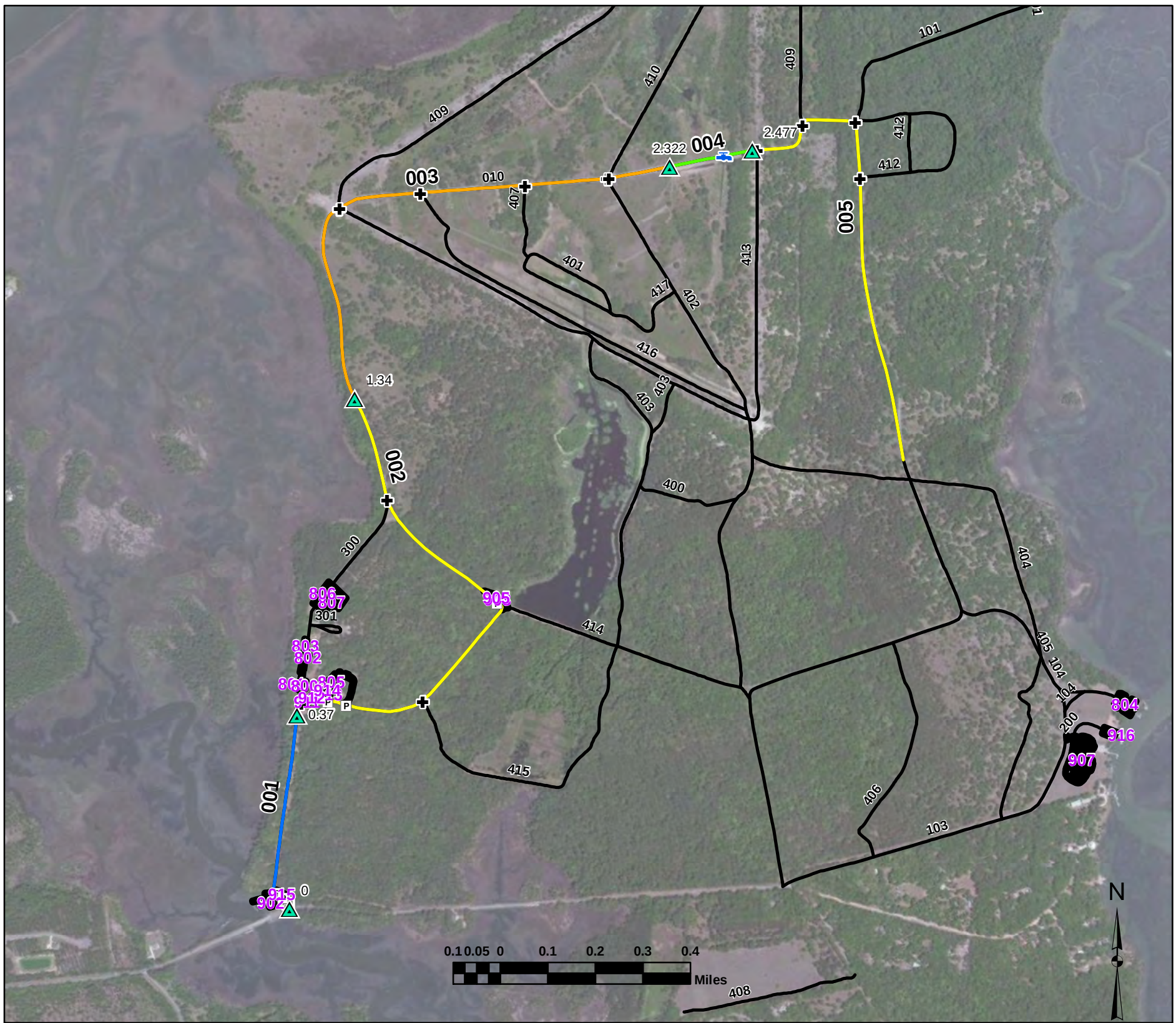
Harris Neck

Routes added to previous inventory:		
Rte #	**Rte Name**	**Reason for Addition**
200	Crabber's Dock Access Road	New Special Use Route
300	HQ/VC Administrative Access Road	New Administrative Route
301	Volunteer RV Access Loop	New Administrative Route
400	East Woody Pond Cut-Across Road	New Administrative Route
401	Snipe Interior Road	New Administrative Route
402	Pumphouse Road	New Administrative Route
403	Woody Pond Road	New Administrative Route
404	Powerline Road	New Administrative Route
405	Gould Cemetery Access Road	New Administrative Route
406	Southeast Cut-Across Road	New Administrative Route
407	North Snipe Exterior Road	New Administrative Route
408	Lucas Tract Access Road	New Administrative Route
409	North Airfield Road	New Administrative Route
410	Goose Pond Road	New Administrative Route
411	Bunker Road	New Administrative Route
412	Bunting Loop Road	New Administrative Route
413	South Airfield Perimeter Road	New Administrative Route
414	Woody Pond Road	New Administrative Route
415	Bluegill Levee Road	New Administrative Route
416	South Snipe Exterior Road	New Administrative Route
417	East Snipe Exterior Road	New Administrative Route
800	Headquarters Staff Parking	New Administrative Route
801	Shop Parking	New Administrative Route
804	Boat House Area parking	New Administrative Route
805	Ecological Services Office Employee Parking	New Administrative Route
806	East Maintenance Parking	New Administrative Route
807	West Maintenance Parking	New Administrative Route
912	HQ/VC Handicapped Parking	New Public Route
913	Ecological Services Office Public Parking	New Public Route
914	Ecological Services Office Handicap Parking	New Public Route
915	Entrance Kiosk Parking	New Public Route
916	Crabber's Dock Parking	New Public Route

Routes removed from previous inventory:		
Rte #	**Rte Name**	**Reason for Removal**
909	Universal Access LE Quarters Parking	Became part of 906

Routes modified from previous inventory:			
Rte #	**Rte Name**	**Type of Modification**	**Description of Modification**
101	Thomas Landing Road	Re-Sectioned	
802	East LE Quarters Parking	Functional Class Change	Formally Route 900, no longer open to the public
803	West LE Quarters Parking	Functional Class Change	Formally Route 901, no longer open to the public
902	Entrance Boat Ramp Parking	Geometery Change and Name Change	
905	Woody Pond Handicap Parking	Re-GPSed, Renamed and Re-Surfaced	Handicap parking needs to be removed from description of Asset 10059793
906	Thomas Landing Parking	Re-GPSed	909 became part of 906
907	Barbour River Landing Parking	Re-GPSed	Corrected error Cycle 3 data
908	Woody Pond Parking	Re-GPSed, Renamed and Re-Surfaced	
911	HQ/VC Parking	Surface Type Change	

Comments:



Auto Tour Route

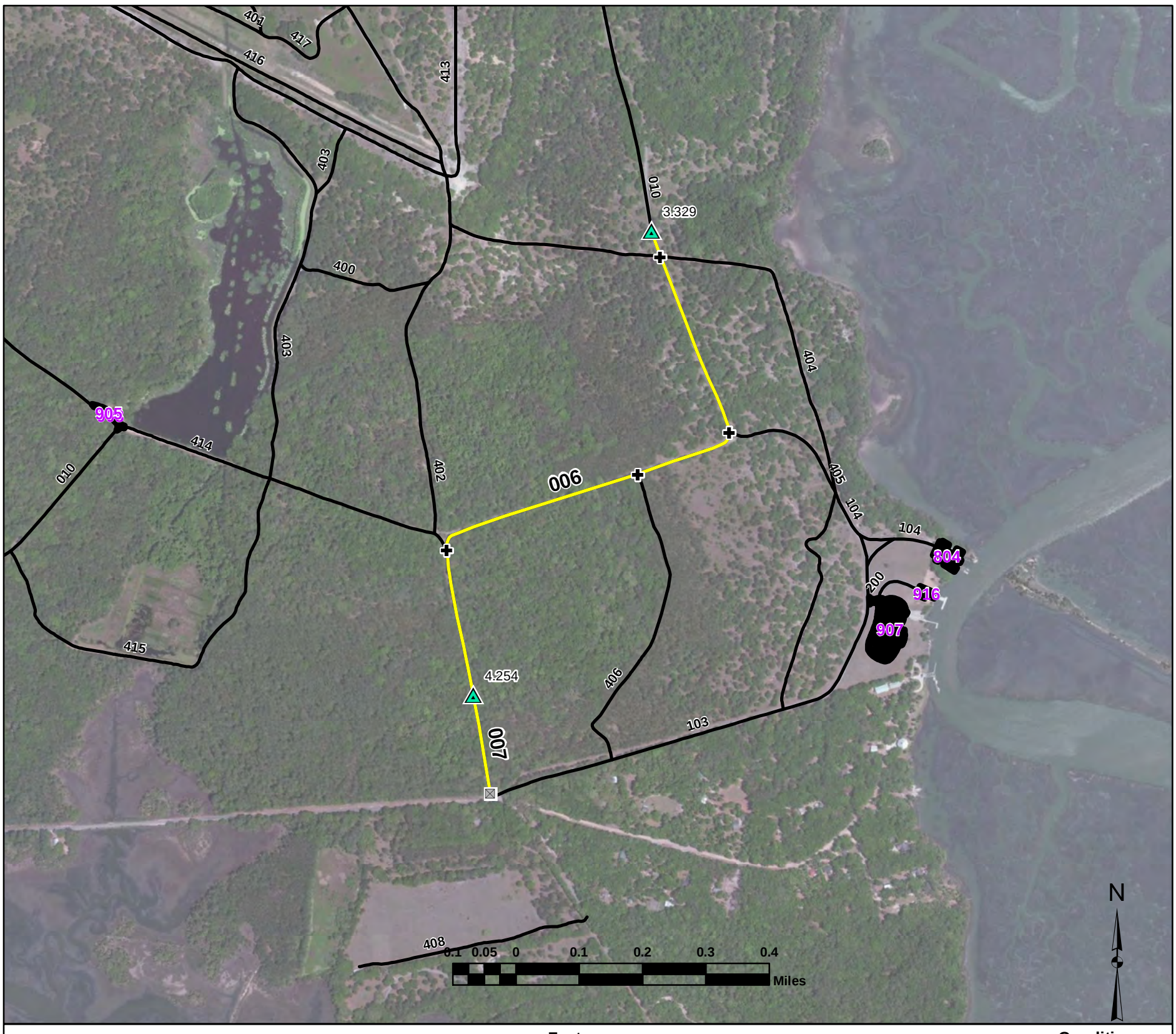
From Harris Neck Road (West) to Harris Neck Road (East)

Route Number: 010

Total Route Mileage: 4.41

Asset Number	10015049	10015049	10015049	10015049	10015049
Section Number	001	002	003	004	005
Section Length (miles)	0.37	0.97	0.98	0.15	0.85
Inspection Date	01-29-2011	01-29-2011	01-29-2011	01-29-2011	01-29-2011
Surface Type	Asphalt	Asphalt	Asphalt	Gravel	Asphalt
Number of Lanes	2	1	1	1	1
Roadway Width (feet)	16	14	14	12	14
Condition	Excellent	Fair	Poor	Good	Fair
Remaining Service Life (years)	20	12	6	7	10
Estimated Cost to Repair	$0	$97,400	$537,700	$200	$85,600
Current Replacement Value	$411,600	$1,078,200	$1,091,400	$99,200	$947,800

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0	Intersection	003-1.68				
Gate	001-0.01	Intersection	003-1.84				
Turnout/Parking	001-0.02	Intersection	003-2.04				
Turnout/Parking	001-0.04	Intersection	003-2.2				
Begin Section	002-0.37	Intersection	003-2.21				
Intersection	002-0.39	Begin Section	004-2.32				
Turnout/Parking	002-0.41	Water Control Structure	004-2.43				
Turnout/Parking	002-0.42	Begin Section	005-2.48				
Turnout/Parking	002-0.45	Intersection	005-2.49				
Turnout/Parking	002-0.49	Intersection	005-2.61				
Intersection	002-0.62	Intersection	005-2.72				
Turnout/Parking	002-0.89	Intersection	005-2.82				
Intersection	002-1.16						
Begin Section	003-1.34						
Intersection	003-1.68						



Auto Tour Route

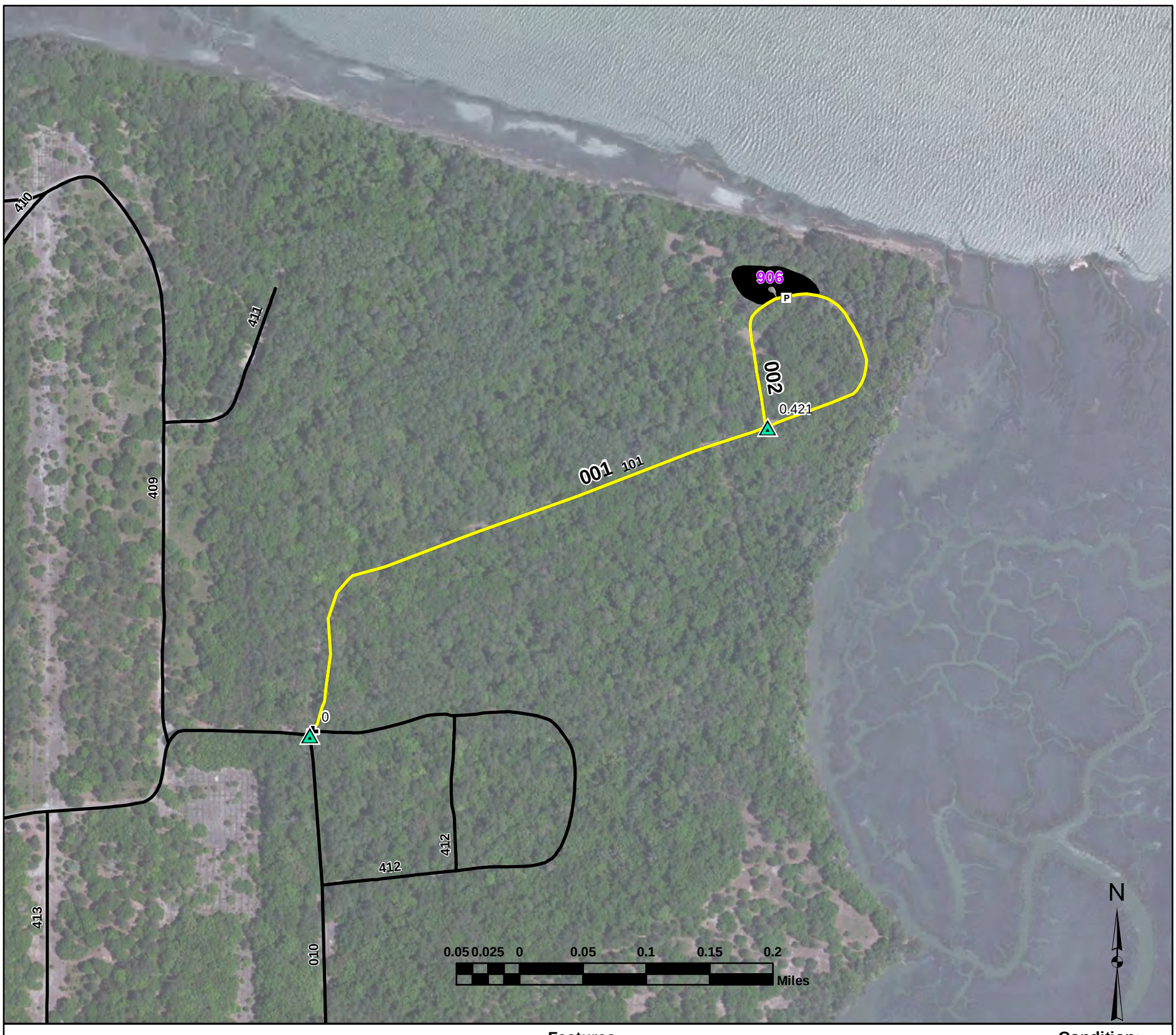
From Harris Neck Road (West) to Harris Neck Road (East)

Route Number: 010

Total Route Mileage: 4.41

Asset Number	10015049	10015049			
Section Number	006	007			
Section Length (miles)	0.94	0.15			
Inspection Date	01-29-2011	01-29-2011			
Surface Type	Asphalt	Asphalt			
Number of Lanes	1	1			
Roadway Width (feet)	14	14			
Condition	Fair	Fair			
Remaining Service Life (years)	10	12			
Estimated Cost to Repair	$93,900	$14,700			
Current Replacement Value	$1,039,600	$162,900			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	006-3.33						
Intersection	006-3.36						
Intersection	006-3.6						
Intersection	006-3.76						
Intersection	006-4.07						
Begin Section	007-4.25						
Gate	007-4.39						



Thomas Landing Road

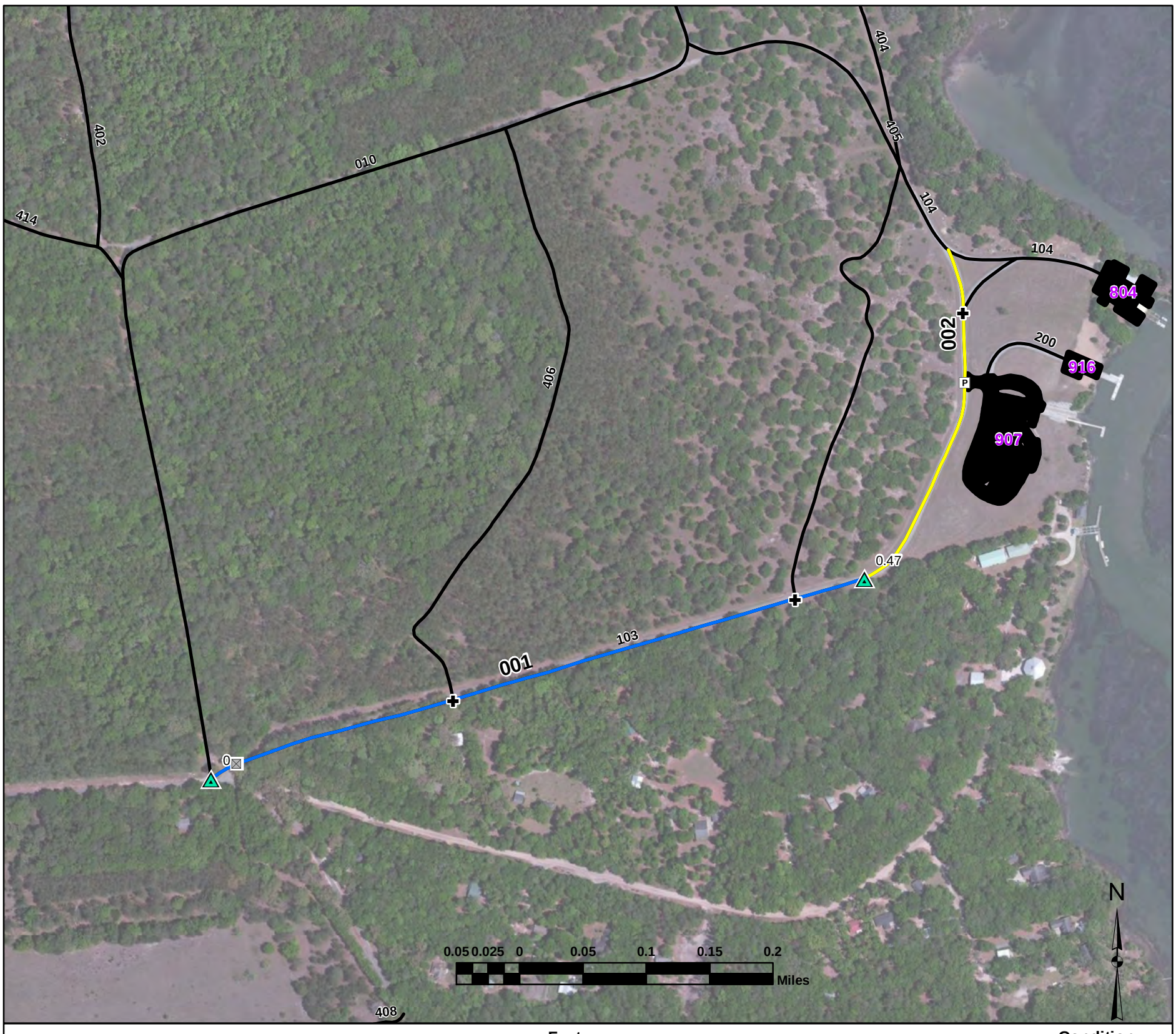
From Auto Tour Route (Route 010) to end of loop

Route Number: 101

Total Route Mileage: 0.70

Asset Number	10037386	10037386			
Section Number	001	002			
Section Length (miles)	0.42	0.27			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Asphalt	Asphalt			
Number of Lanes	2	1			
Roadway Width (feet)	16	14			
Condition	Fair	Fair			
Remaining Service Life (years)	12	12			
Estimated Cost to Repair	$42,300	$27,500			
Current Replacement Value	$468,000	$305,000			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Intersection	001-0.0						
Begin Section	002-0.42						
Turnout/Parking	002-0.59						



Barbour River Landing Road

From Harris Neck Road to Boat House Access Road (Route 104)

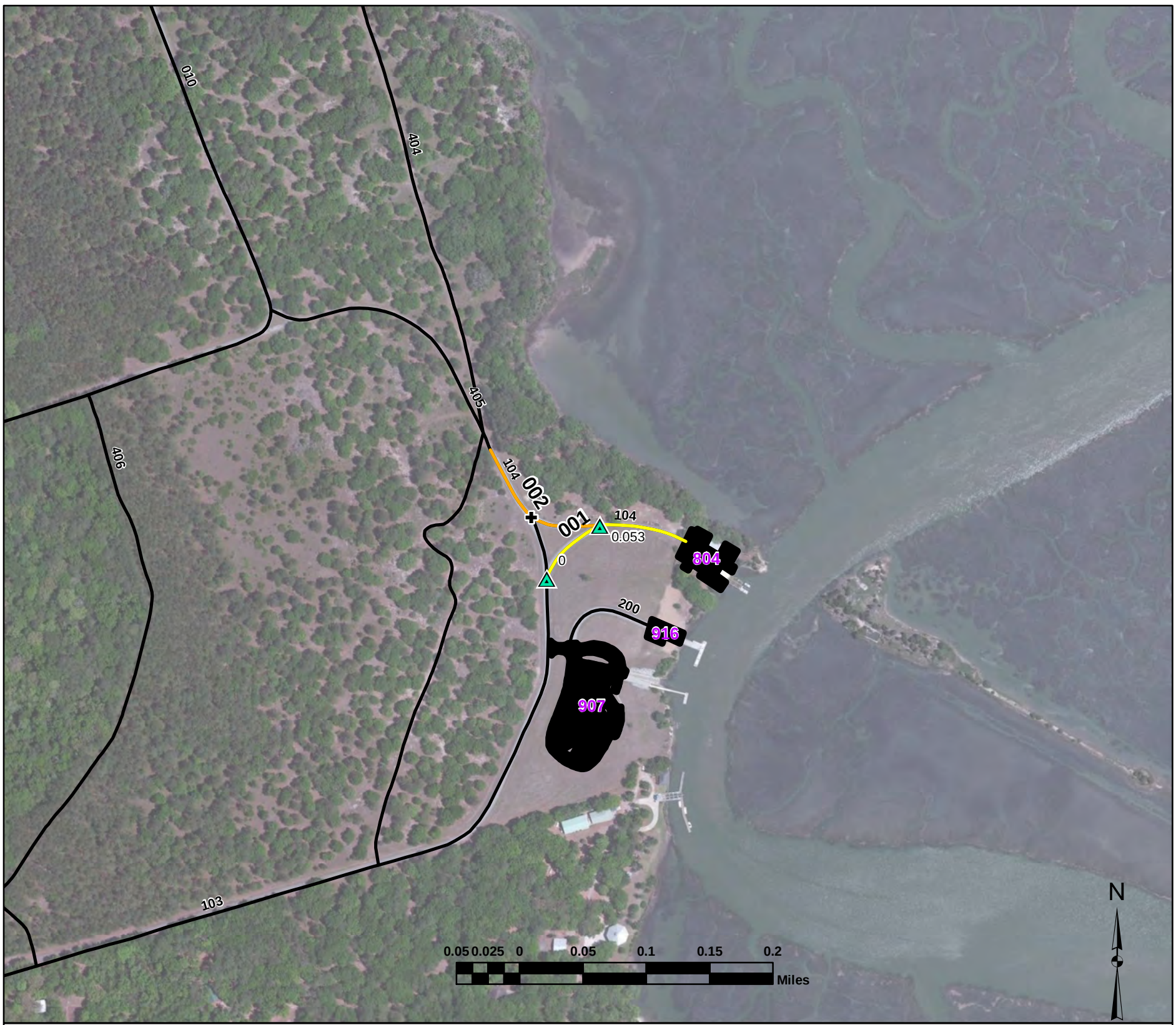
Route Number: 103

Total Route Mileage: 0.72

Asset Number	10037389	10037389			
Section Number	001	002			
Section Length (miles)	0.47	0.25			
Inspection Date	01-29-2011	01-29-2011			
Surface Type	Asphalt	Asphalt			
Number of Lanes	2	2			
Roadway Width (feet)	22	18			
Condition	Excellent	Fair			
Remaining Service Life (years)	20	8			
Estimated Cost to Repair	$0	$25,000			
Current Replacement Value	$523,100	$277,000			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Gate	001-0.02						
Intersection	001-0.18						
Intersection	001-0.42						
Begin Section	002-0.47						
Turnout/Parking	002-0.63						
Intersection	002-0.68						

ROUTE 104



Boat House Access Road

From Barbour River Landing Road (Route 103) to Boat House Area Parking (Route 804)

Route Number: 104

Total Route Mileage: 0.22

Asset Number	10037390	10037390			
Section Number	001	002			
Section Length (miles)	0.11	0.10			
Inspection Date	01-29-2011	01-29-2011			
Surface Type	Asphalt	Asphalt			
Number of Lanes	1	1			
Roadway Width (feet)	12	14			
Condition	Fair	Poor			
Remaining Service Life (years)	10	6			
Estimated Cost to Repair	$11,400	$56,200			
Current Replacement Value	$126,700	$114,100			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Begin Section	002-0.05						
Intersection	002-0.11						

Crabber's Dock Access Road

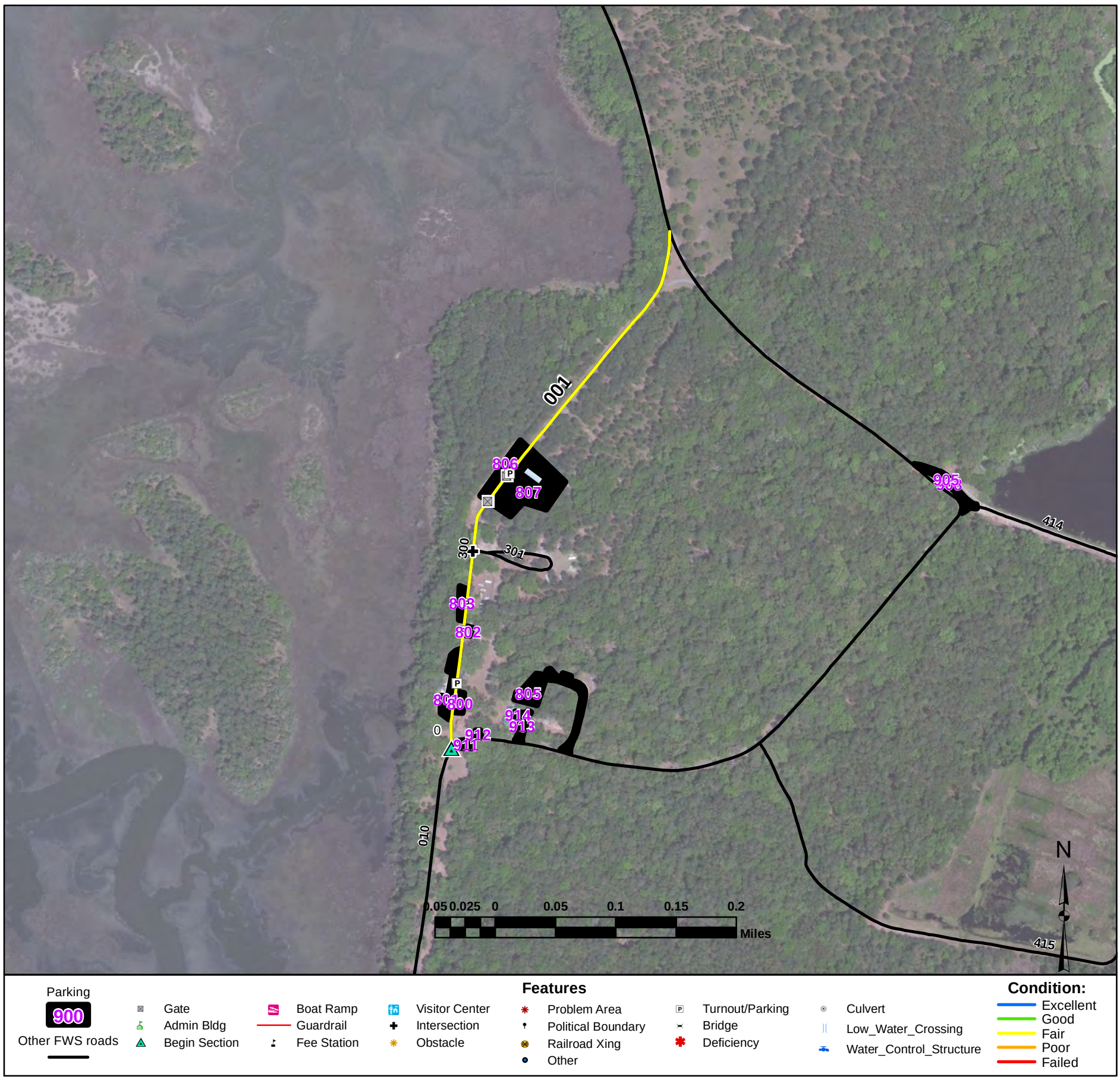
From Barbour River Landing Parking (Route 907) to Crabber's Dock Parking (Route 916)

Route Number: 200

Total Route Mileage: 0.07

Asset Number	-				
Section Number	001				
Section Length (miles)	0.07				
Inspection Date	01-28-2011				
Surface Type	Asphalt				
Number of Lanes	2				
Roadway Width (feet)	22				
Condition	Poor				
Remaining Service Life (years)	6				
Estimated Cost to Repair	$38,500				
Current Replacement Value	$78,100				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Turnout/Parking	001-0.07						



HQ/VC Administrative Access Road

From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)

Route Number: 300

Total Route Mileage: 0.42

Asset Number	10037385				
Section Number	001				
Section Length (miles)	0.42				
Inspection Date	01-28-2011				
Surface Type	Asphalt				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Fair				
Remaining Service Life (years)	12				
Estimated Cost to Repair	$42,300				
Current Replacement Value	$468,700				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Turnout/Parking	001-0.03						
Turnout/Parking	001-0.05						
Turnout/Parking	001-0.08						
Turnout/Parking	001-0.1						
Intersection	001-0.14						
Gate	001-0.18						
Gate	001-0.2						
Turnout/Parking	001-0.2						

Volunteer RV Access Loop

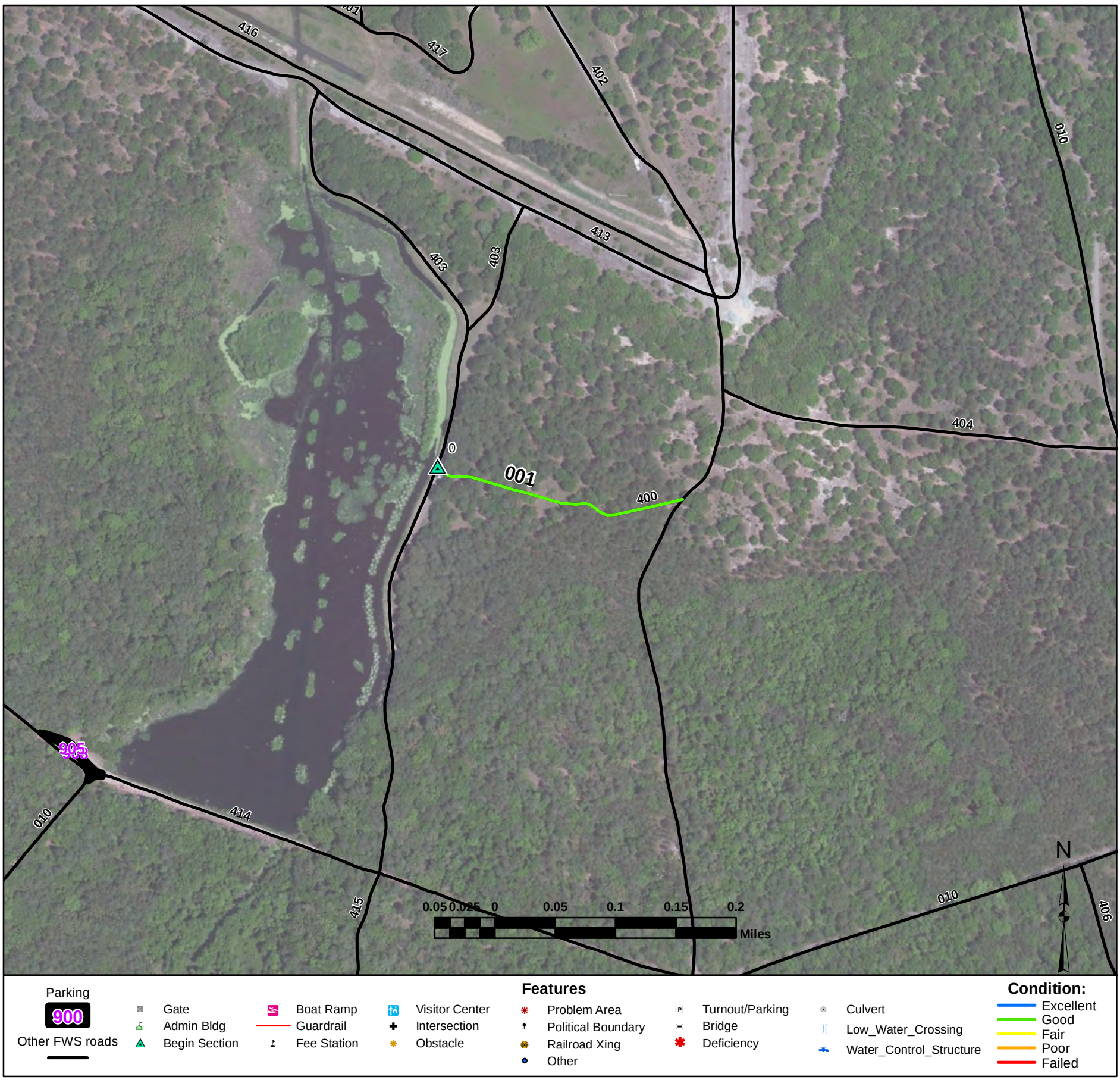
From HQ/VC Administrative Access Road (Route 300) to end of loop

Route Number: 301

Total Route Mileage: 0.11

Asset Number	-				
Section Number	001				
Section Length (miles)	0.11				
Inspection Date	01-28-2011				
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Good				
Remaining Service Life (years)	7				
Estimated Cost to Repair	$200				
Current Replacement Value	$71,200				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						



East Woody Pond Cut-Across Road

From East Woody Pond Road (Route 403) to Pumphouse Road (Route 402)

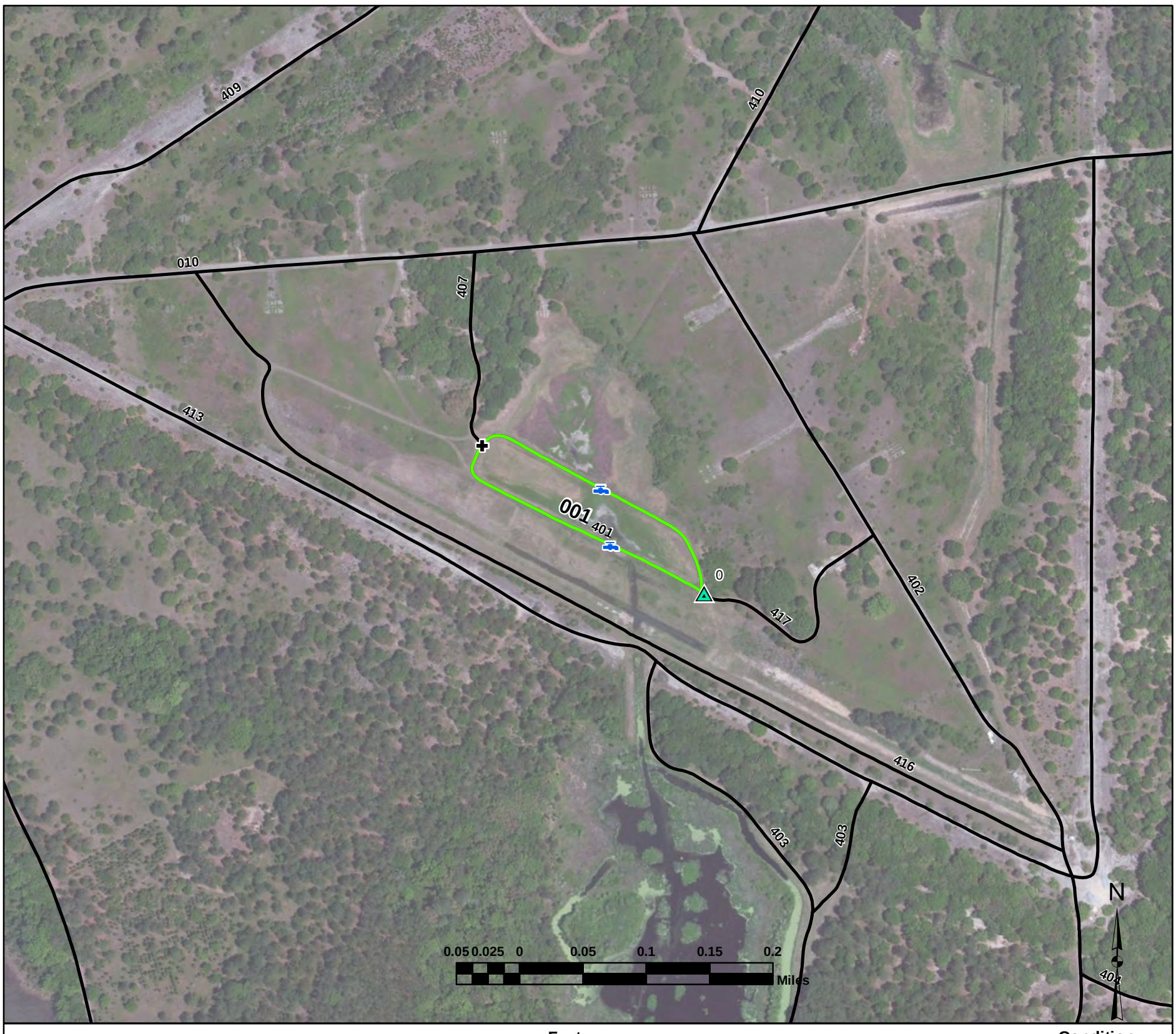
Route Number: 400

Total Route Mileage: 0.19

Asset Number	10015048				
Section Number	001				
Section Length (miles)	0.19				
Inspection Date	01-28-2011				
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Good				
Remaining Service Life (years)	5				
Estimated Cost to Repair	$100				
Current Replacement Value	$0				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						

ROUTE 401



Snipe Interior Road

From East Snipe Exterior Road (Route 417) to East Snipe Exterior Road (Route 417)

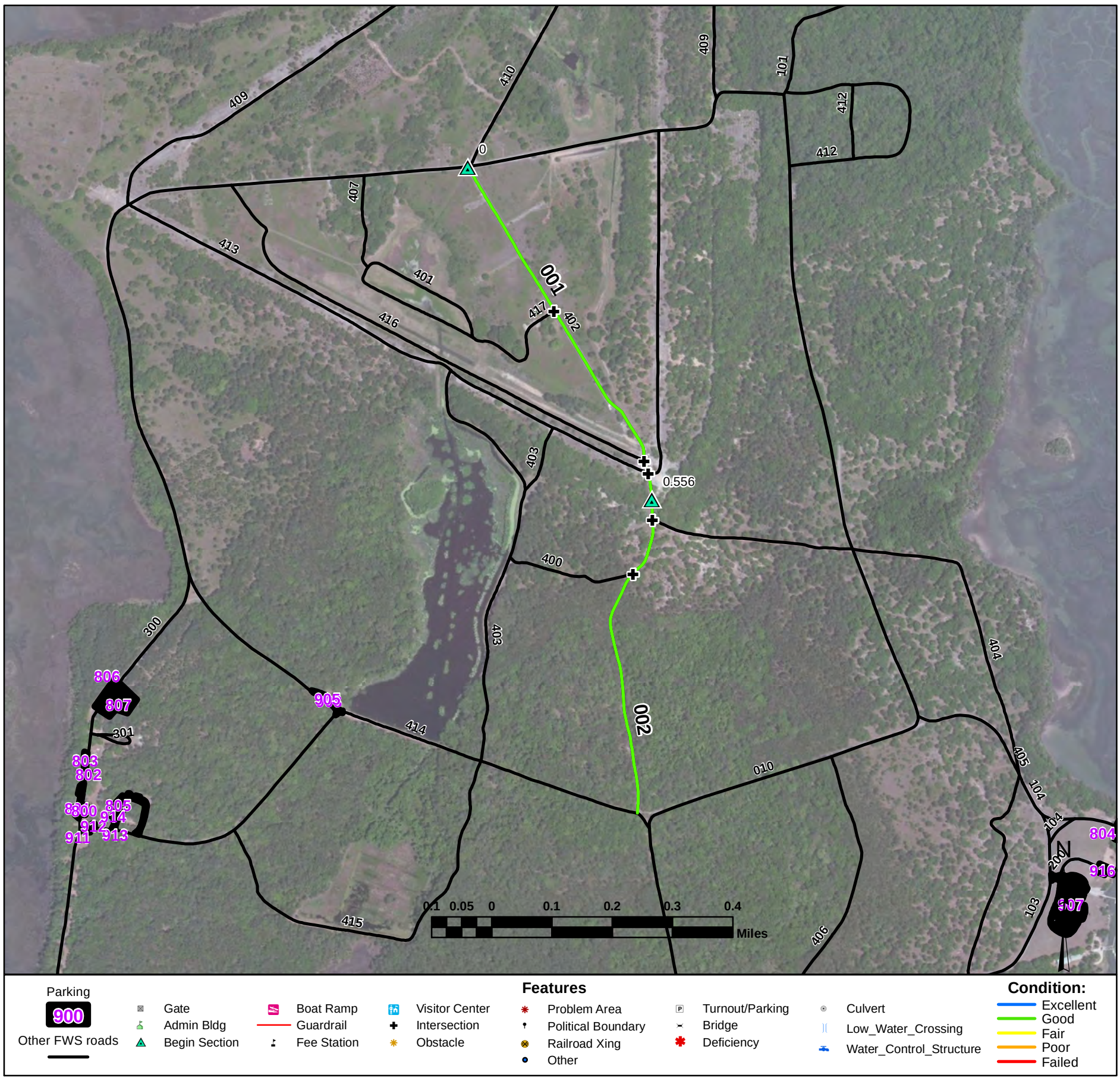
Route Number: 401

Total Route Mileage: 0.40

Asset Number	10061146				
Section Number	001				
Section Length (miles)	0.40				
Inspection Date	01-28-2011				
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Good				
Remaining Service Life (years)	7				
Estimated Cost to Repair	$600				
Current Replacement Value	$133,300				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.11						
Intersection	001-0.2						
Water Control Structure	001-0.33						

ROUTE 402



Pumphouse Road

From Auto Tour Route (Route 010) to Woody Pond Road (Route 414)

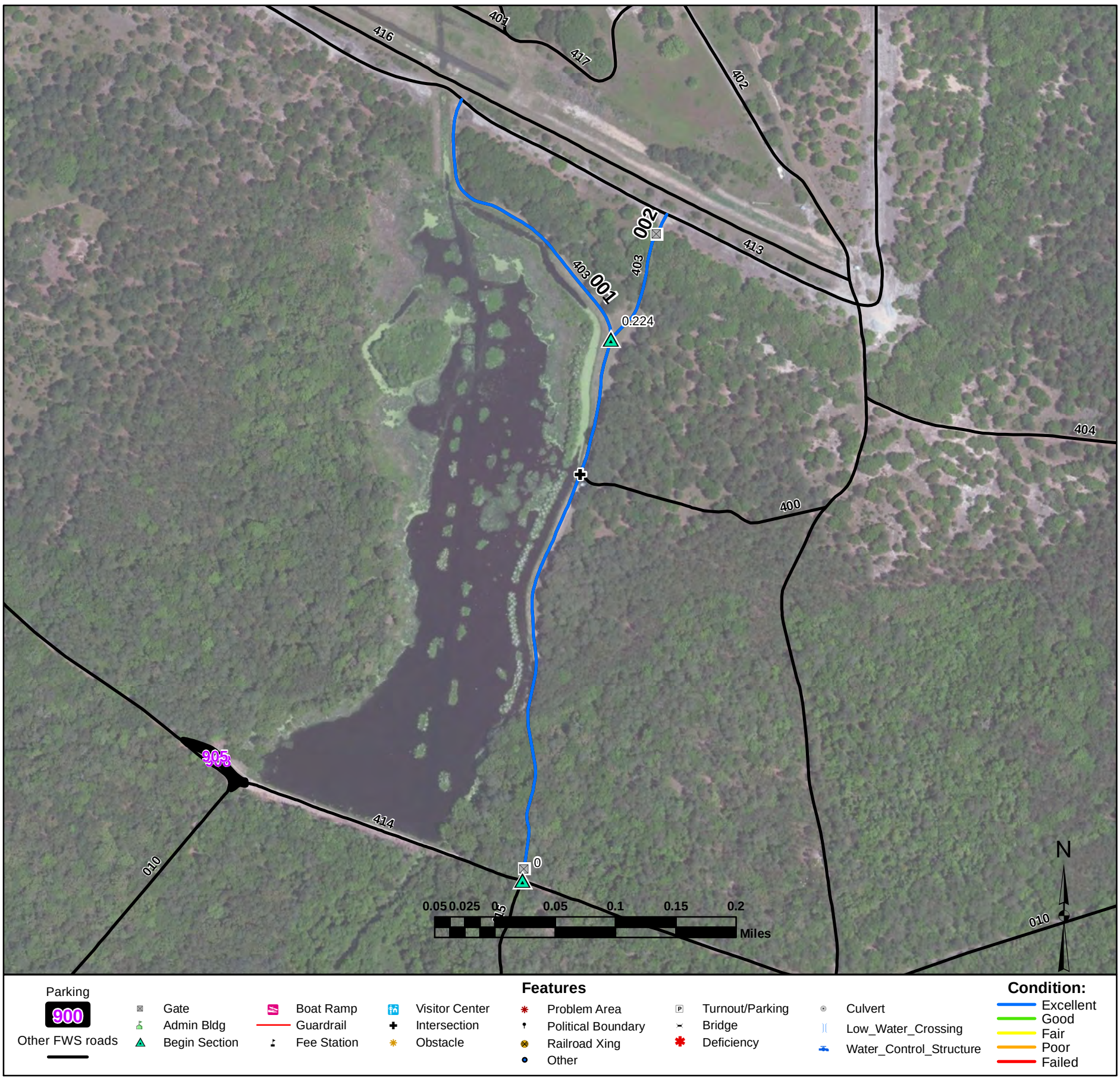
Route Number: 402

Total Route Mileage: 1.03

Asset Number	10015048	10015048			
Section Number	001	002			
Section Length (miles)	0.56	0.47			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Gravel	Native			
Number of Lanes	1	1			
Roadway Width (feet)	14	12			
Condition	Good	Good			
Remaining Service Life (years)	7	7			
Estimated Cost to Repair	$800	$800			
Current Replacement Value	$356,100	$157,300			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Intersection	001-0.24						
Intersection	001-0.5						
Intersection	001-0.52						
Begin Section	002-0.56						
Intersection	002-0.58						
Intersection	002-0.68						

ROUTE 403



East Woody Pond Road

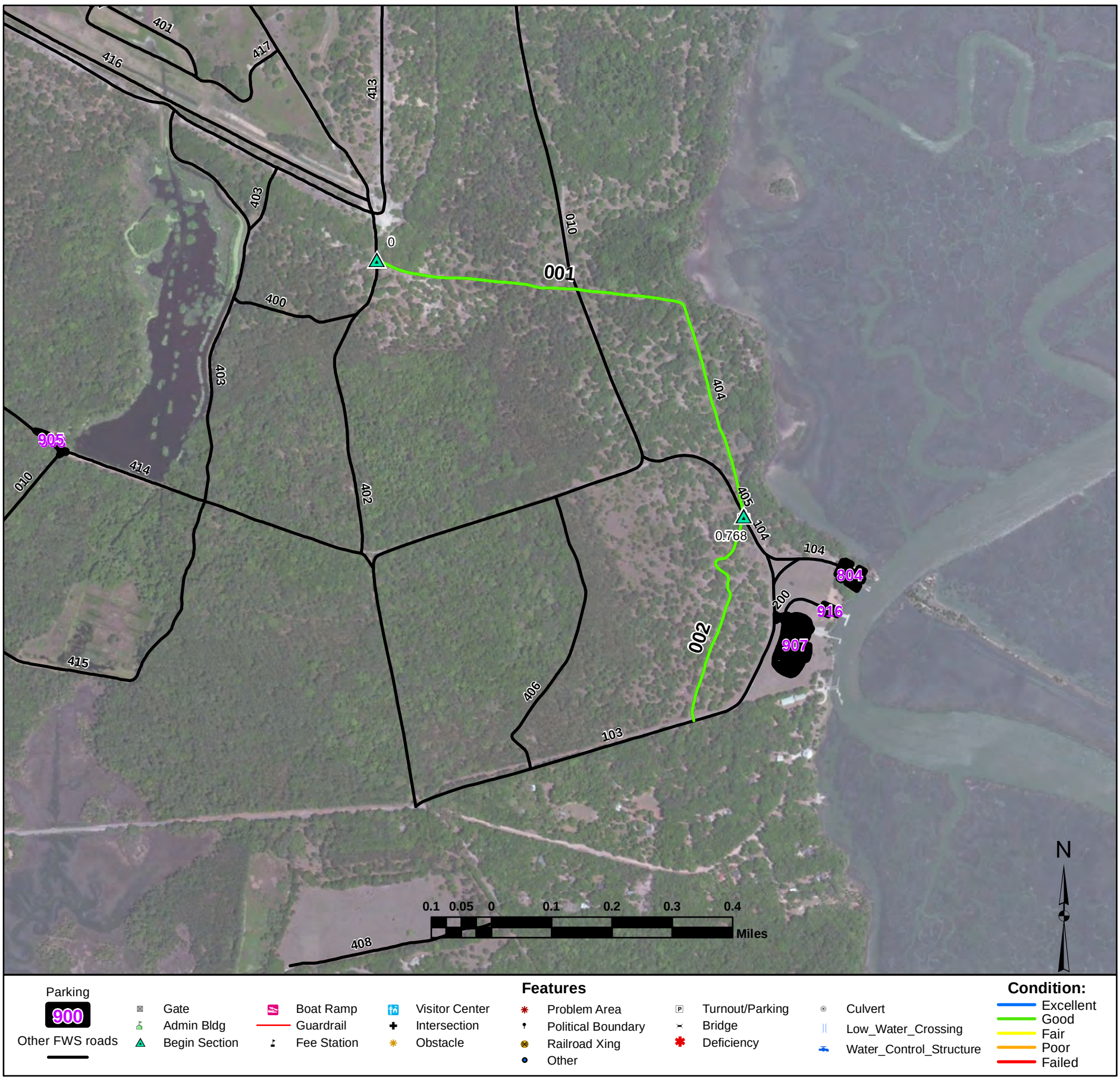
From Woody Pond Road (Route 414) to South Airfield Perimeter Road (Route 413)

Route Number: 403

Total Route Mileage: 0.73

Asset Number	10015048	10015048			
Section Number	001	002			
Section Length (miles)	0.63	0.10			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Primitive	Primitive			
Number of Lanes	1	1			
Roadway Width (feet)	12	12			
Condition	Excellent	Excellent			
Remaining Service Life (years)	9	9			
Estimated Cost to Repair	$0	$0			
Current Replacement Value	$0	$0			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Intersection	001-0.33						
Gate	001-0.62						
Begin Section	002-0.22						
Gate	002-0.31						



Powerline Road

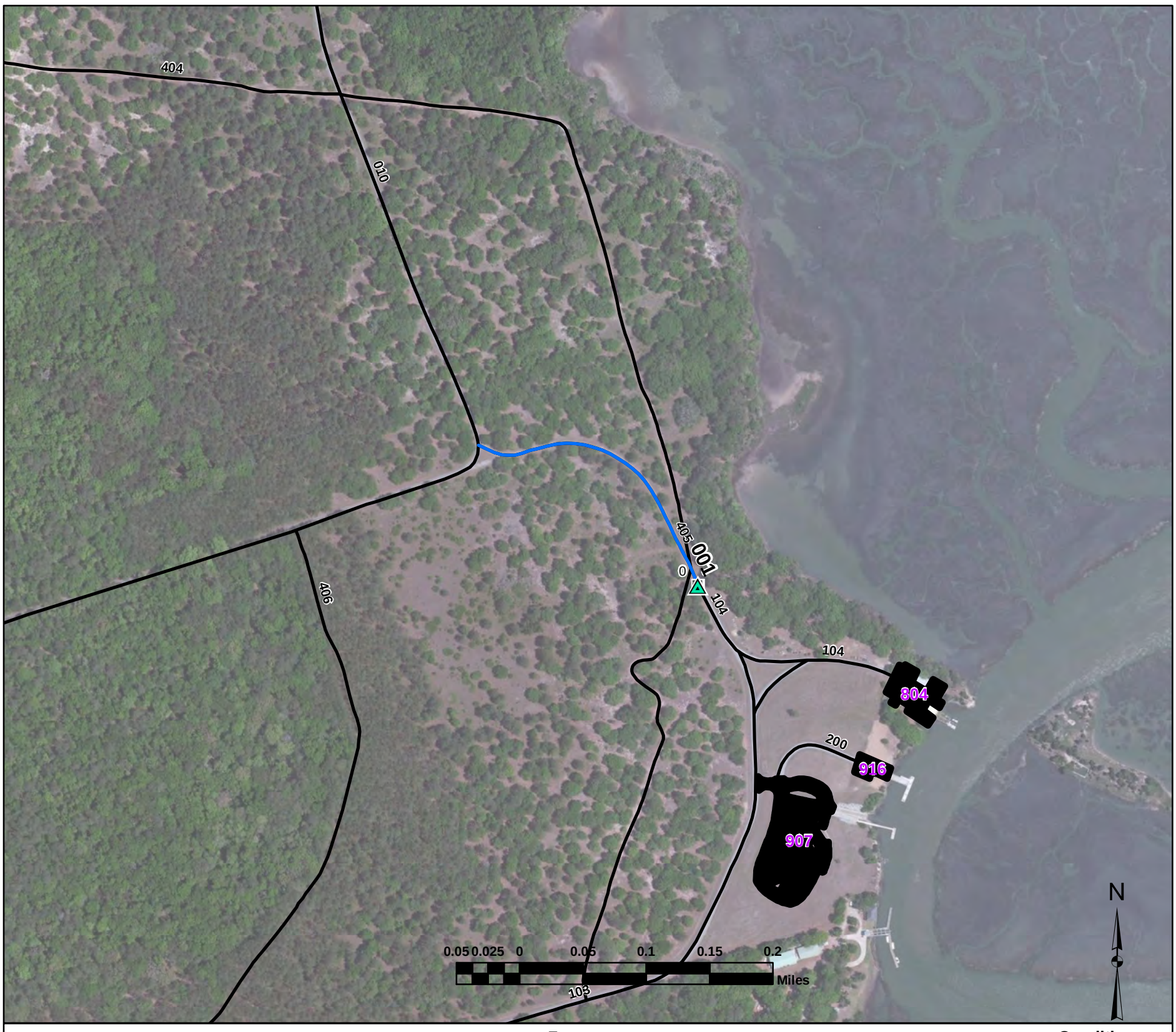
From Pumphouse Road (Route 402) to Barbour River Landing Road (Route 103)

Route Number: 404

Total Route Mileage: 1.10

Asset Number	10015048	10015048			
Section Number	001	002			
Section Length (miles)	0.77	0.33			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Native	Native			
Number of Lanes	1	1			
Roadway Width (feet)	12	12			
Condition	Good	Good			
Remaining Service Life (years)	7	5			
Estimated Cost to Repair	$1,200	$500			
Current Replacement Value	$254,400	$110,500			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Intersection	001-0.77						
Begin Section	002-0.77						



Gould Cemetery Access Road

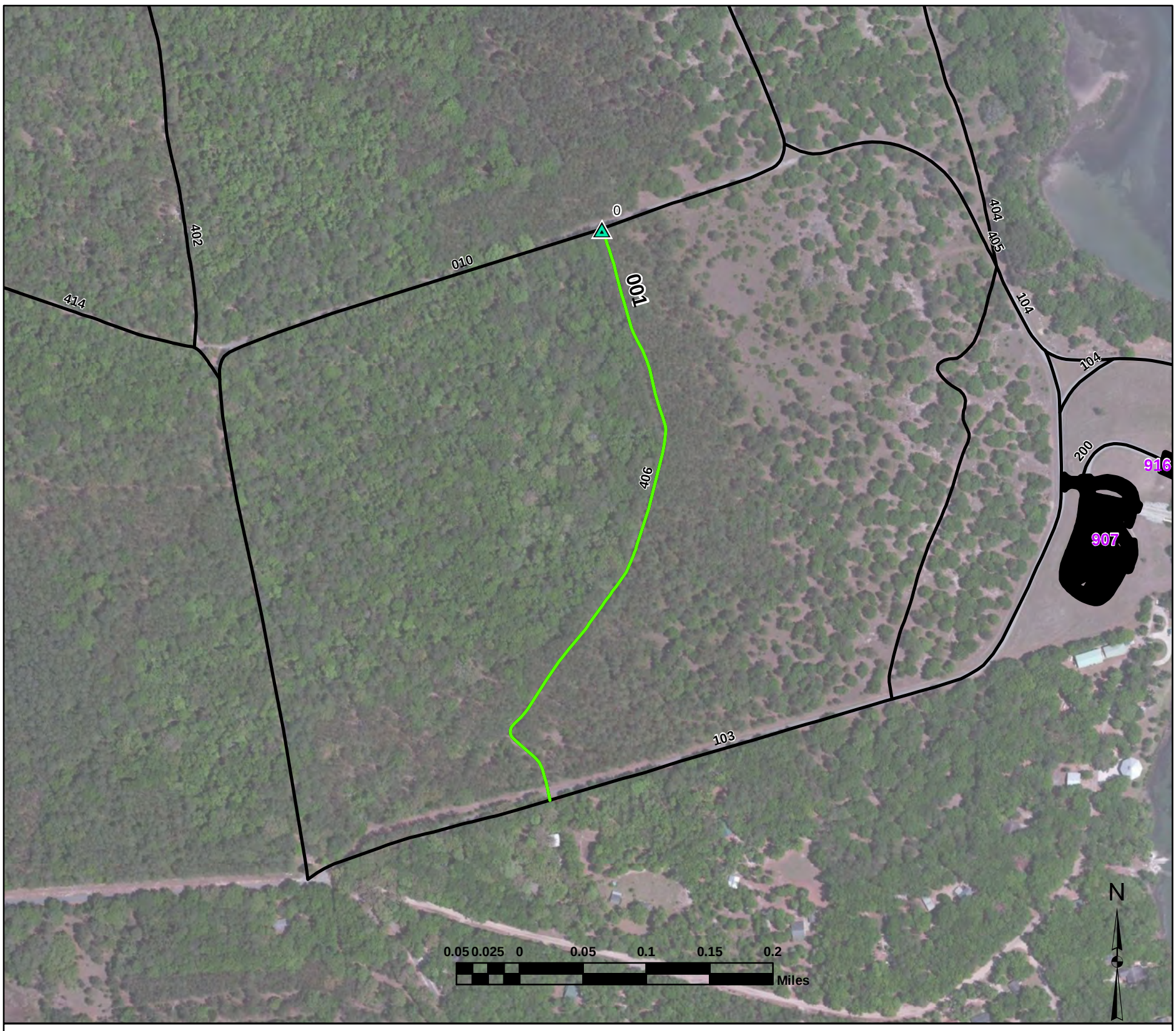
From Boat House Road(Route 104) to Auto Tour Route (Route 010)

Route Number: 405

Total Route Mileage: 0.21

Asset Number	-				
Section Number	001				
Section Length (miles)	0.21				
Inspection Date	01-28-2011				
Surface Type	Gravel				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Excellent				
Remaining Service Life (years)	9				
Estimated Cost to Repair	$0				
Current Replacement Value	$131,500				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Gate	001-0.0						



Southeast Cut-Across Road

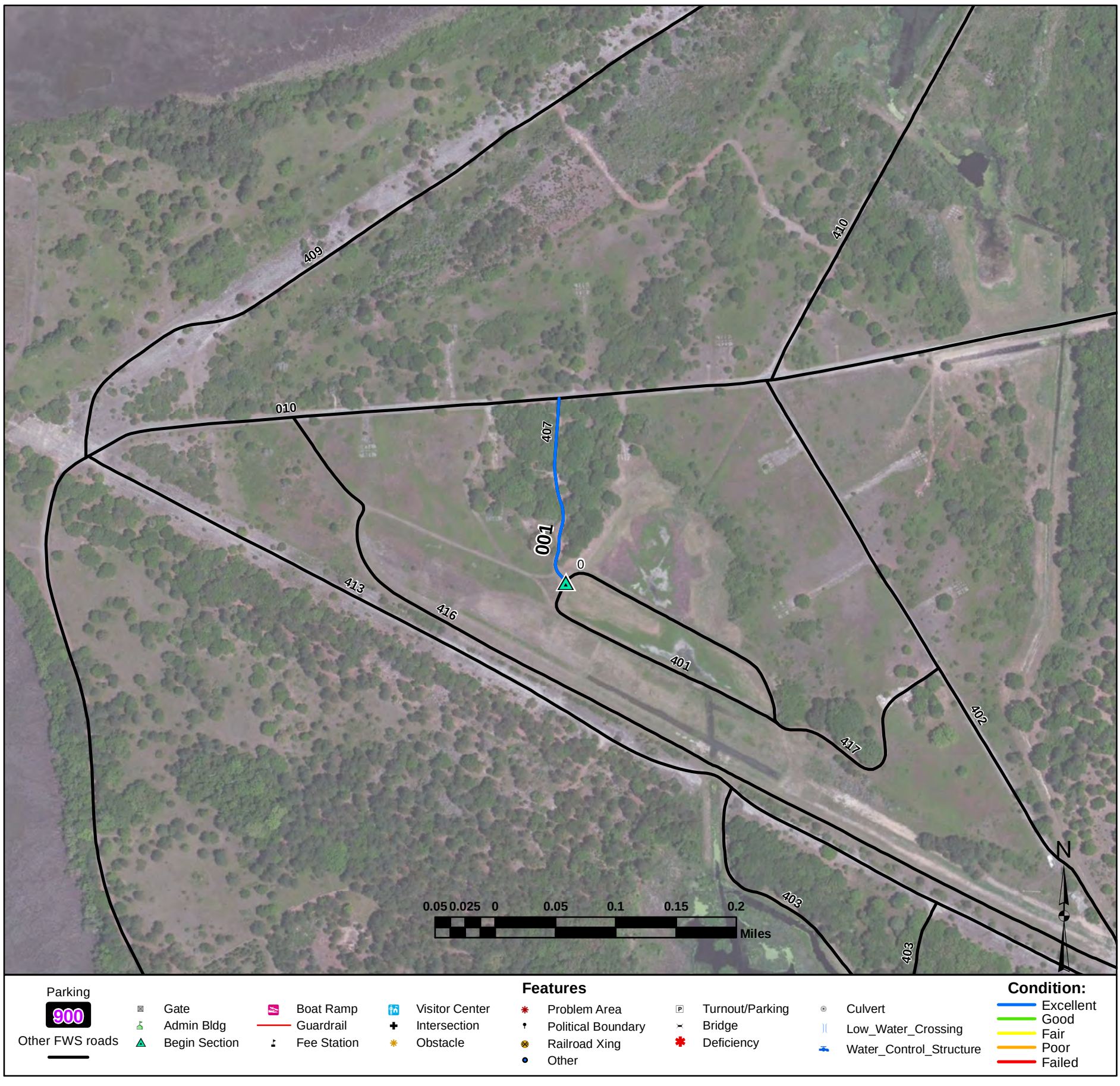
From Auto Tour Route (Route 010) to Barbour River Landing Road (Route 103)

Route Number: 406

Total Route Mileage: 0.44

Asset Number	10015048				
Section Number	001				
Section Length (miles)	0.44				
Inspection Date	01-28-2011				
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Good				
Remaining Service Life (years)	7				
Estimated Cost to Repair	$200				
Current Replacement Value	$0				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						



North Snipe Exterior Road

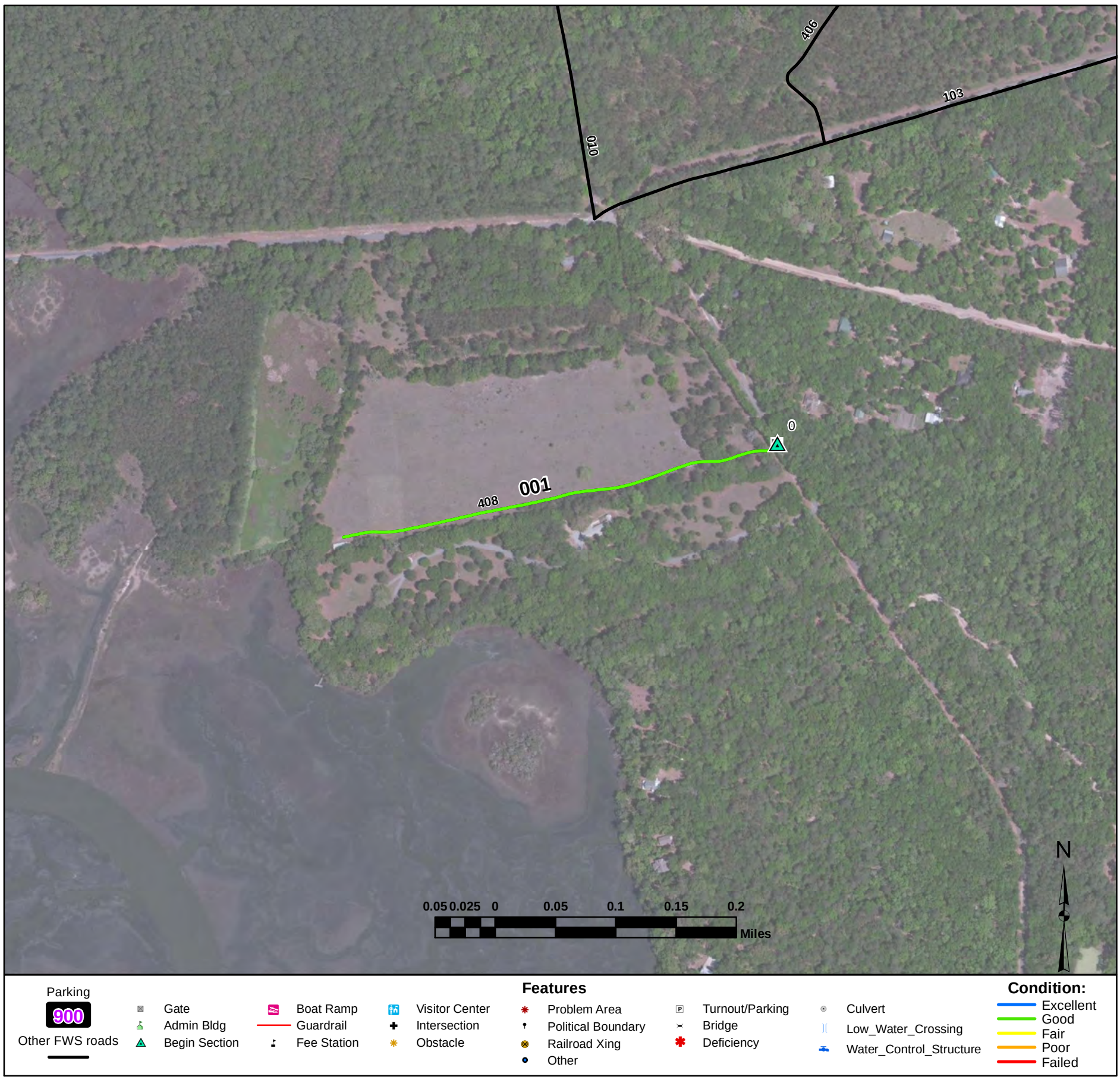
From Snipe Interior Road (Route 401) to Auto Tour Route (Route 010)

Route Number: 407

Total Route Mileage: 0.14

Asset Number	10061147				
Section Number	001				
Section Length (miles)	0.14				
Inspection Date	01-28-2011				
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Excellent				
Remaining Service Life (years)	9				
Estimated Cost to Repair	$0				
Current Replacement Value	$45,300				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						



Lucas Tract Access Road

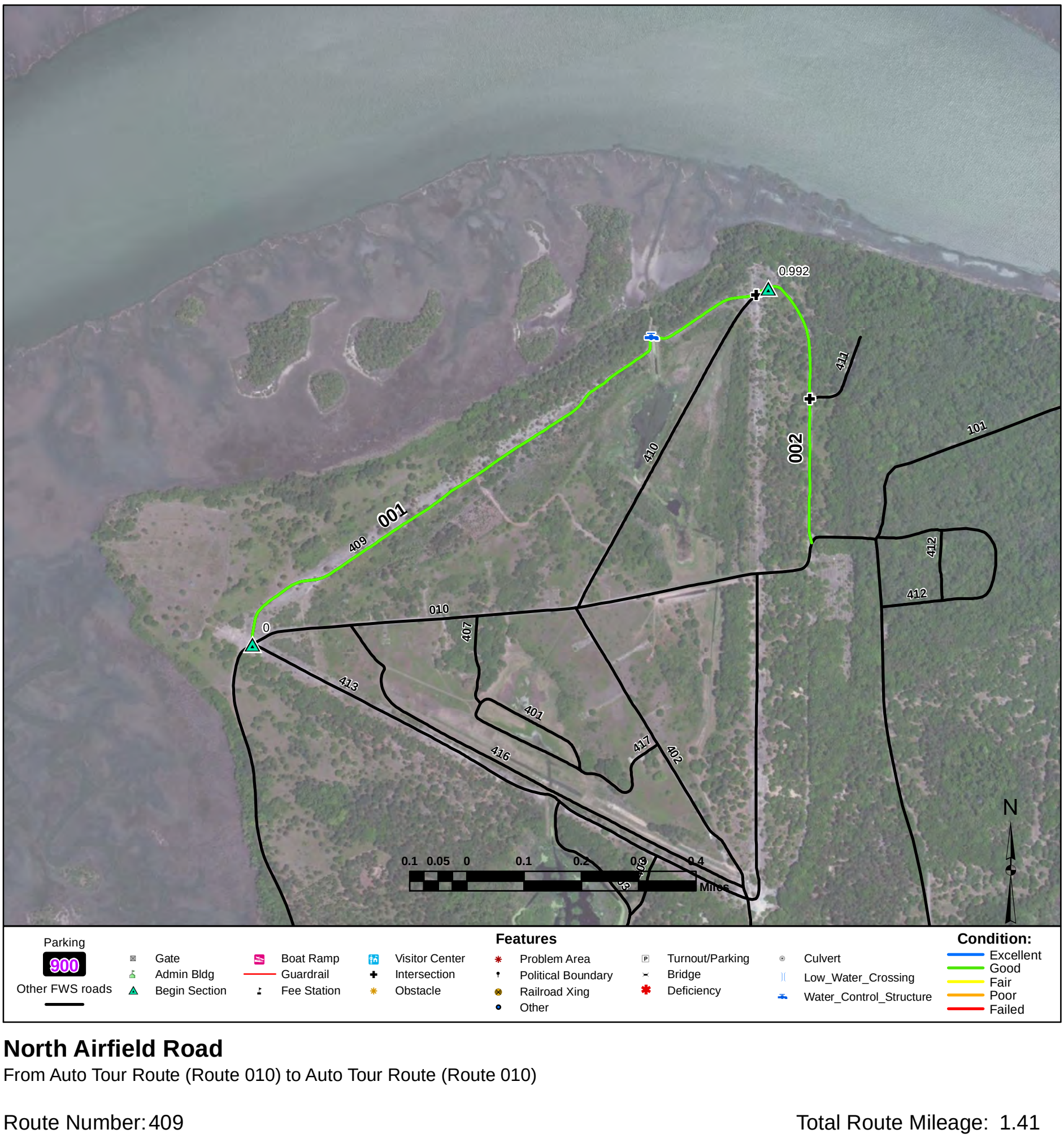
From Julieton Road to end of route near shed

Route Number: 408

Total Route Mileage: 0.32

Asset Number	10015048				
Section Number	001				
Section Length (miles)	0.32				
Inspection Date	01-28-2011				
Surface Type	Primitive				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Good				
Remaining Service Life (years)	7				
Estimated Cost to Repair	$100				
Current Replacement Value	$0				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Gate	001-0.0						



North Airfield Road

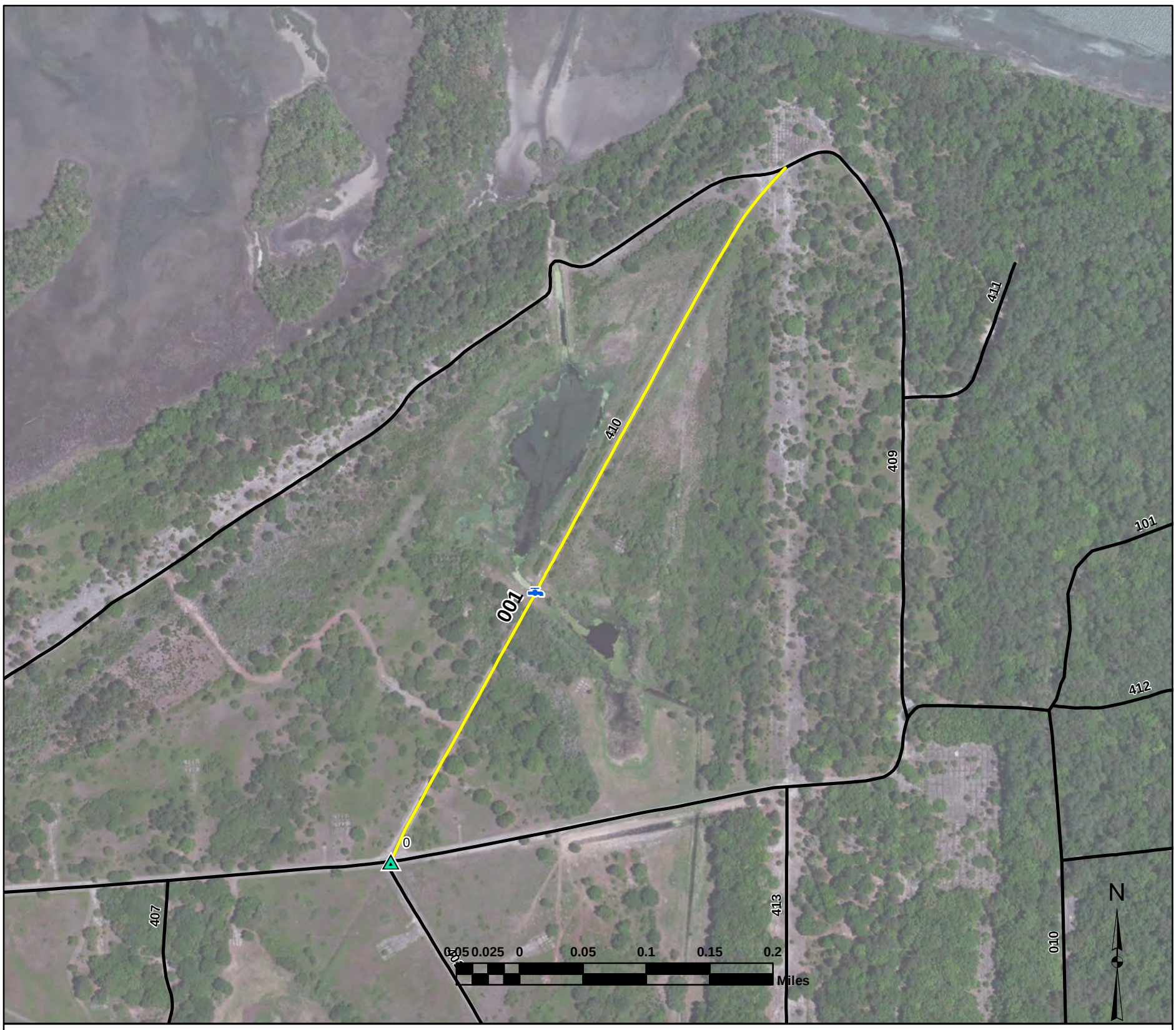
From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)

Route Number: 409

Total Route Mileage: 1.41

Asset Number	-	-			
Section Number	001	002			
Section Length (miles)	0.99	0.42			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	14	14			
Condition	Good	Good			
Remaining Service Life (years)	7	7			
Estimated Cost to Repair	$1,500	$600			
Current Replacement Value	$636,000	$268,400			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.79						
Intersection	001-0.97						
Begin Section	002-0.99						
Intersection	002-1.19						



Goose Pond Road

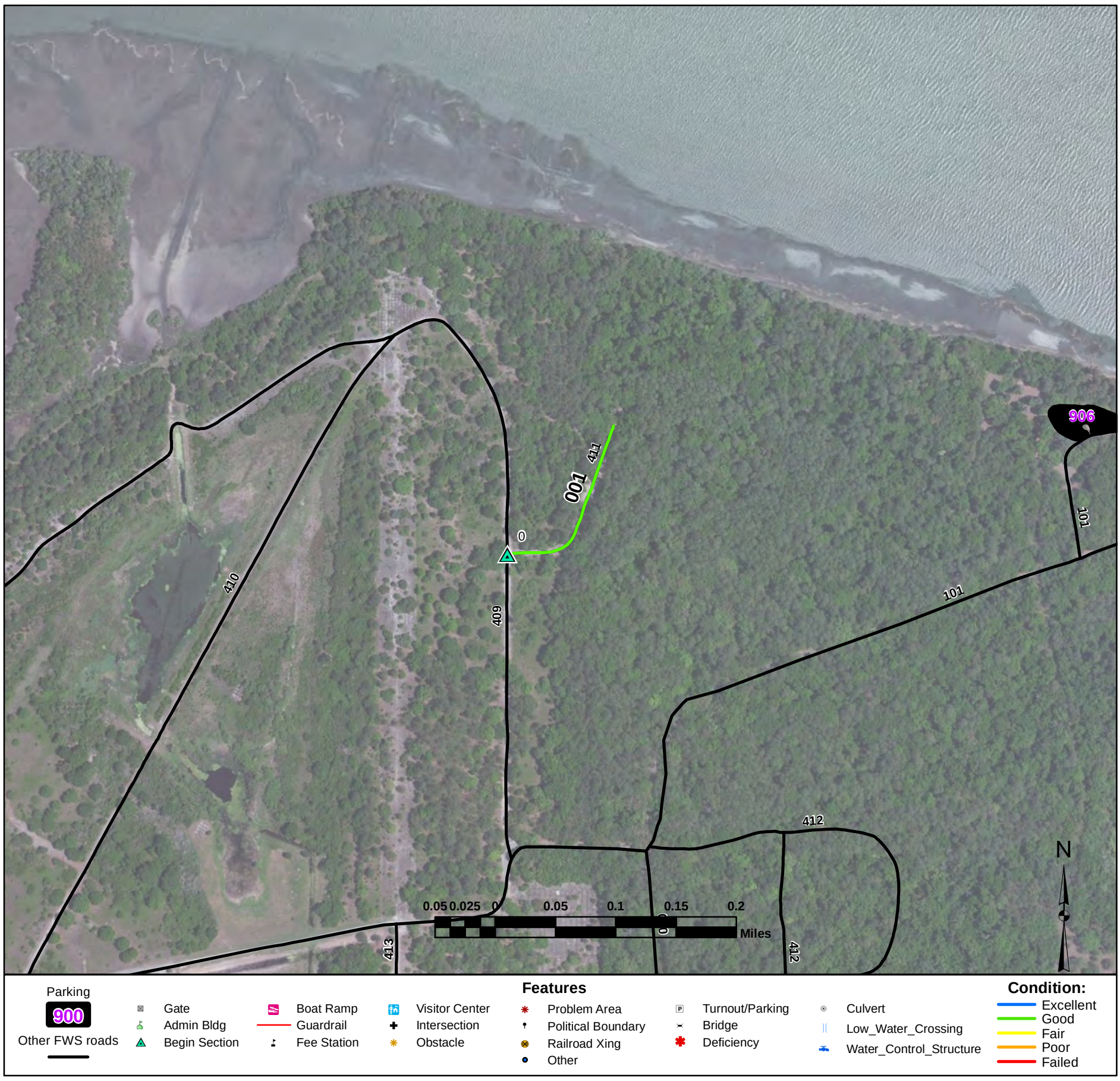
From Auto Tour Route (Route 010) to North Airfield Road (Route 409)

Route Number: 410

Total Route Mileage: 0.55

Asset Number	10061153				
Section Number	001				
Section Length (miles)	0.55				
Inspection Date	01-28-2011				
Surface Type	Asphalt				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Fair				
Remaining Service Life (years)	8				
Estimated Cost to Repair	$55,200				
Current Replacement Value	$611,000				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.21						



Bunker Road

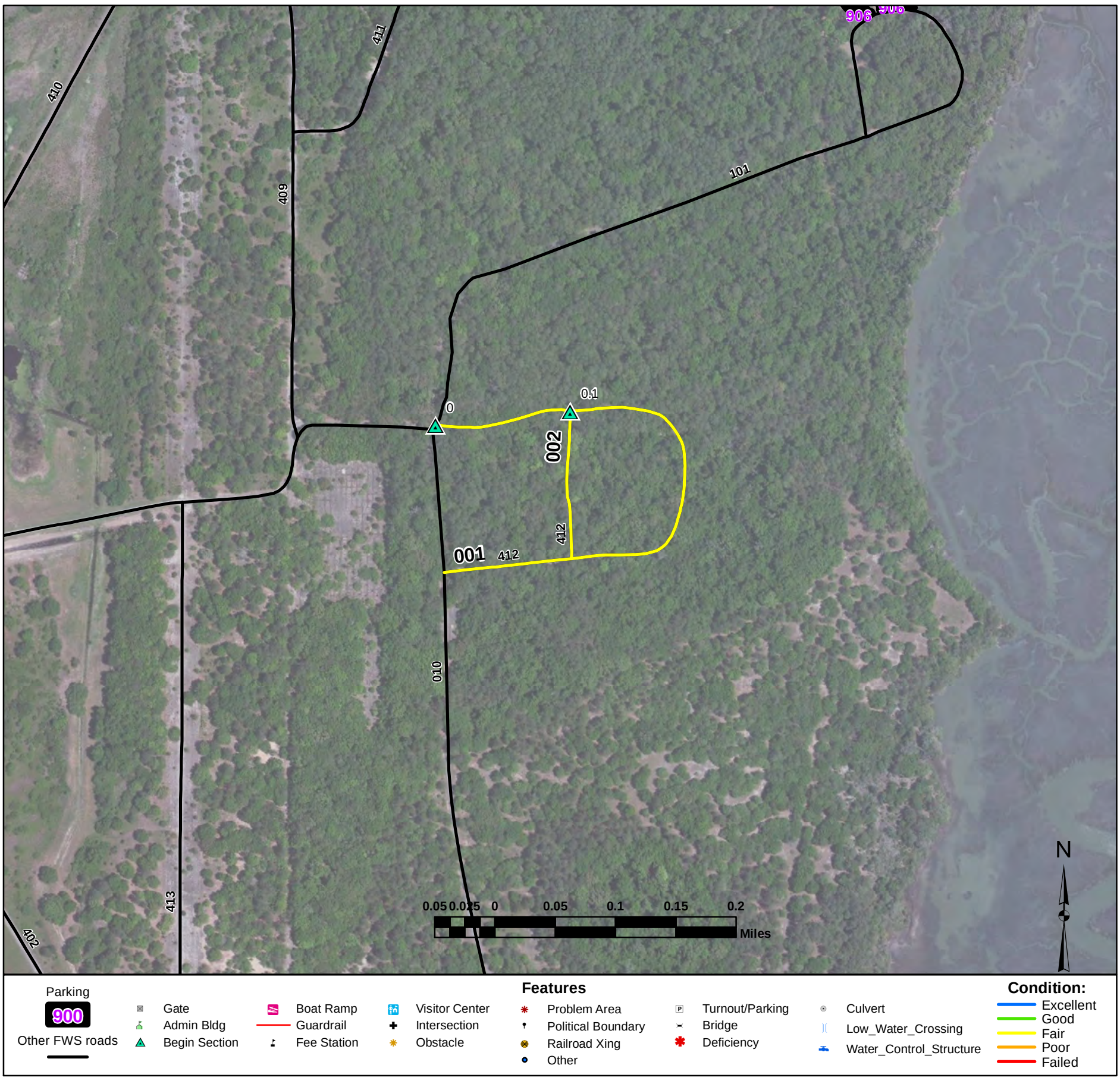
From North Airfield Road (Route 409) to end of route near bunker

Route Number: 411

Total Route Mileage: 0.14

Asset Number	-				
Section Number	001				
Section Length (miles)	0.14				
Inspection Date	01-28-2011				
Surface Type	Gravel				
Number of Lanes	2				
Roadway Width (feet)	20				
Condition	Good				
Remaining Service Life (years)	5				
Estimated Cost to Repair	$200				
Current Replacement Value	$87,800				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						



Bunting Loop Road

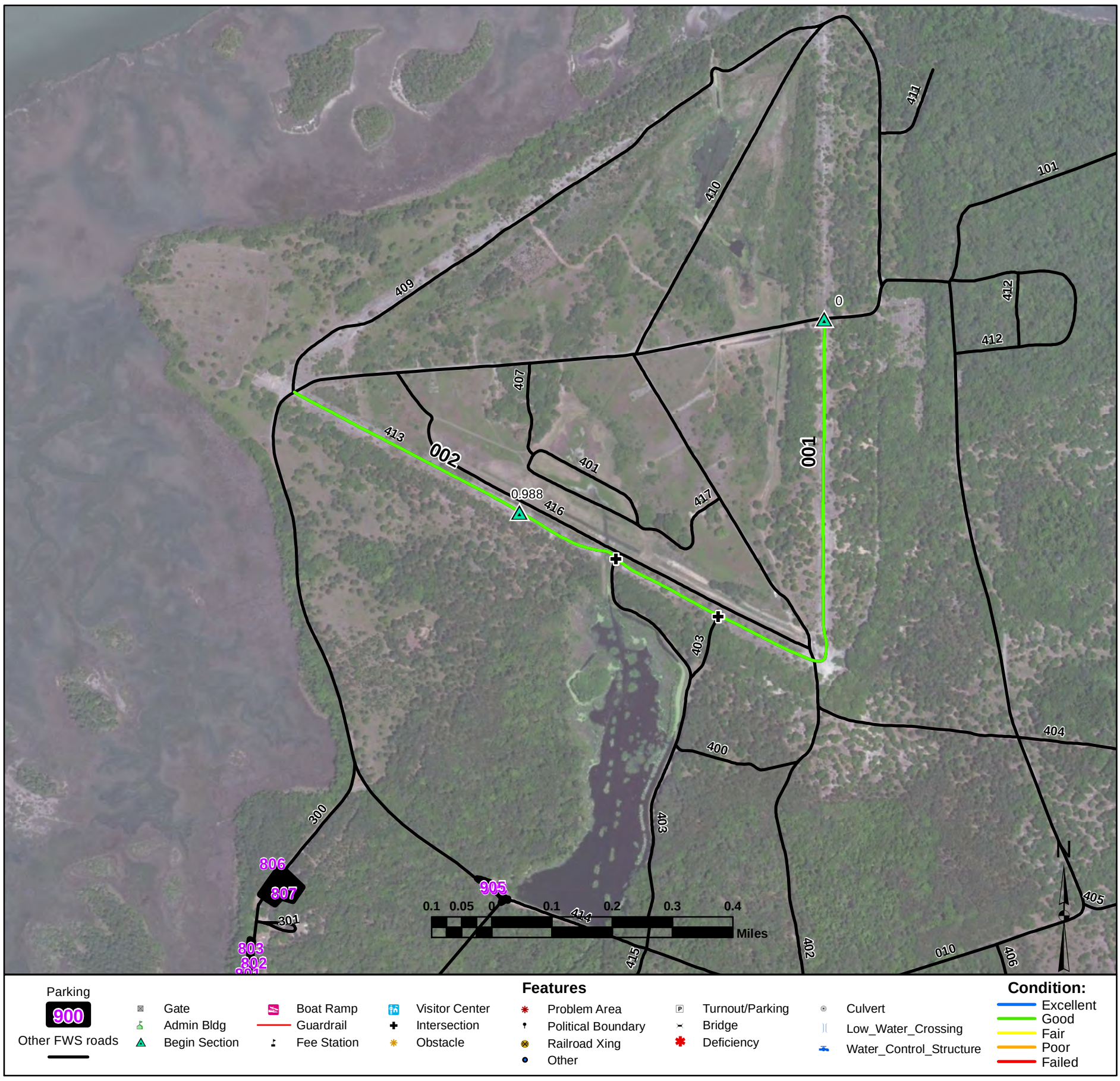
From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)

Route Number: 412

Total Route Mileage: 0.54

Asset Number	-	-			
Section Number	001	002			
Section Length (miles)	0.43	0.11			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Asphalt	Asphalt			
Number of Lanes	1	1			
Roadway Width (feet)	10	8			
Condition	Fair	Fair			
Remaining Service Life (years)	10	10			
Estimated Cost to Repair	$43,100	$10,700			
Current Replacement Value	$477,400	$119,000			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Begin Section	002-0.1						



South Airfield Perimeter Road

From Auto Tour Route (Route 010) to Auto Tour Route (Route 010)

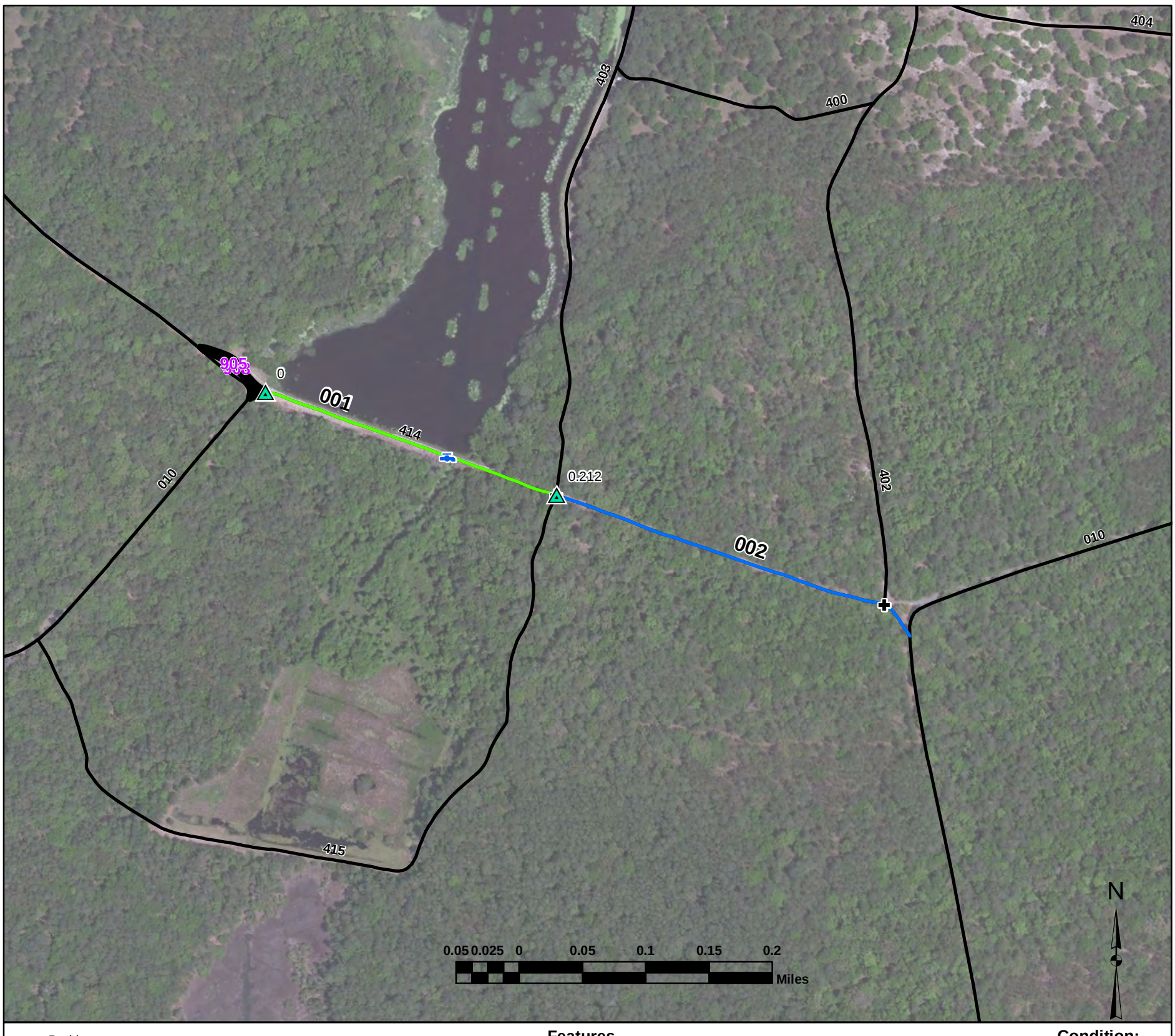
Route Number: 413

Total Route Mileage: 1.36

Asset Number	-	-			
Section Number	001	002			
Section Length (miles)	0.99	0.37			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Gravel	Gravel			
Number of Lanes	1	1			
Roadway Width (feet)	14	14			
Condition	Good	Good			
Remaining Service Life (years)	7	7			
Estimated Cost to Repair	$1,500	$600			
Current Replacement Value	$633,100	$236,000			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Intersection	001-0.65						
Intersection	001-0.83						
Begin Section	002-0.99						

ROUTE 414



Woody Pond Road

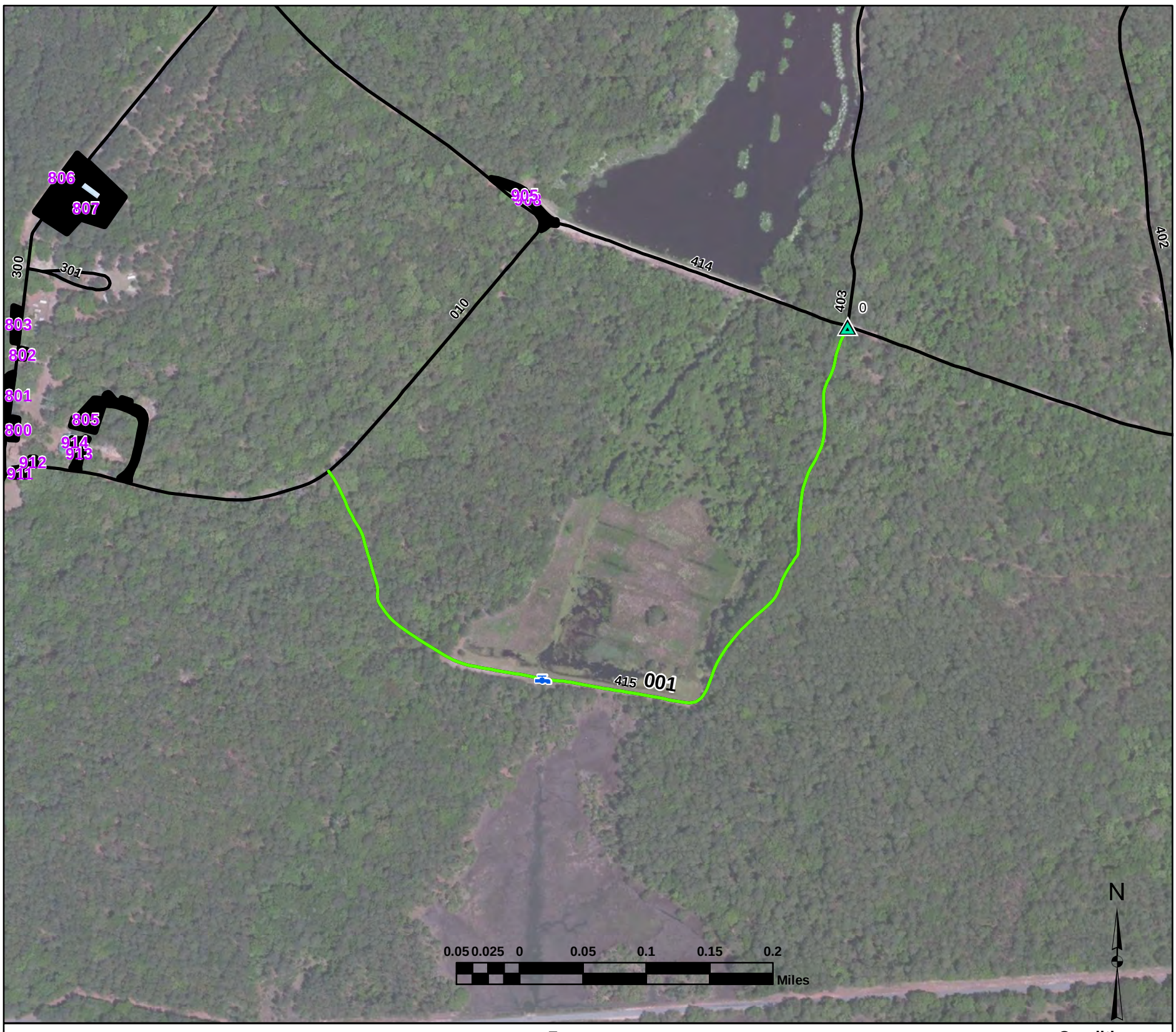
From Woody Pond Parking (Route 908) to Auto Tour Route (Route 010)

Route Number: 414

Total Route Mileage: 0.48

Asset Number	10061127	10061127			
Section Number	001	002			
Section Length (miles)	0.21	0.27			
Inspection Date	01-28-2011	01-28-2011			
Surface Type	Gravel	Gravel			
Number of Lanes	1	2			
Roadway Width (feet)	10	20			
Condition	Good	Excellent			
Remaining Service Life (years)	5	9			
Estimated Cost to Repair	$300	$0			
Current Replacement Value	$136,100	$171,100			

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.13						
Intersection	001-0.21						
Begin Section	002-0.21						
Intersection	002-0.45						



Bluebill Levee Road

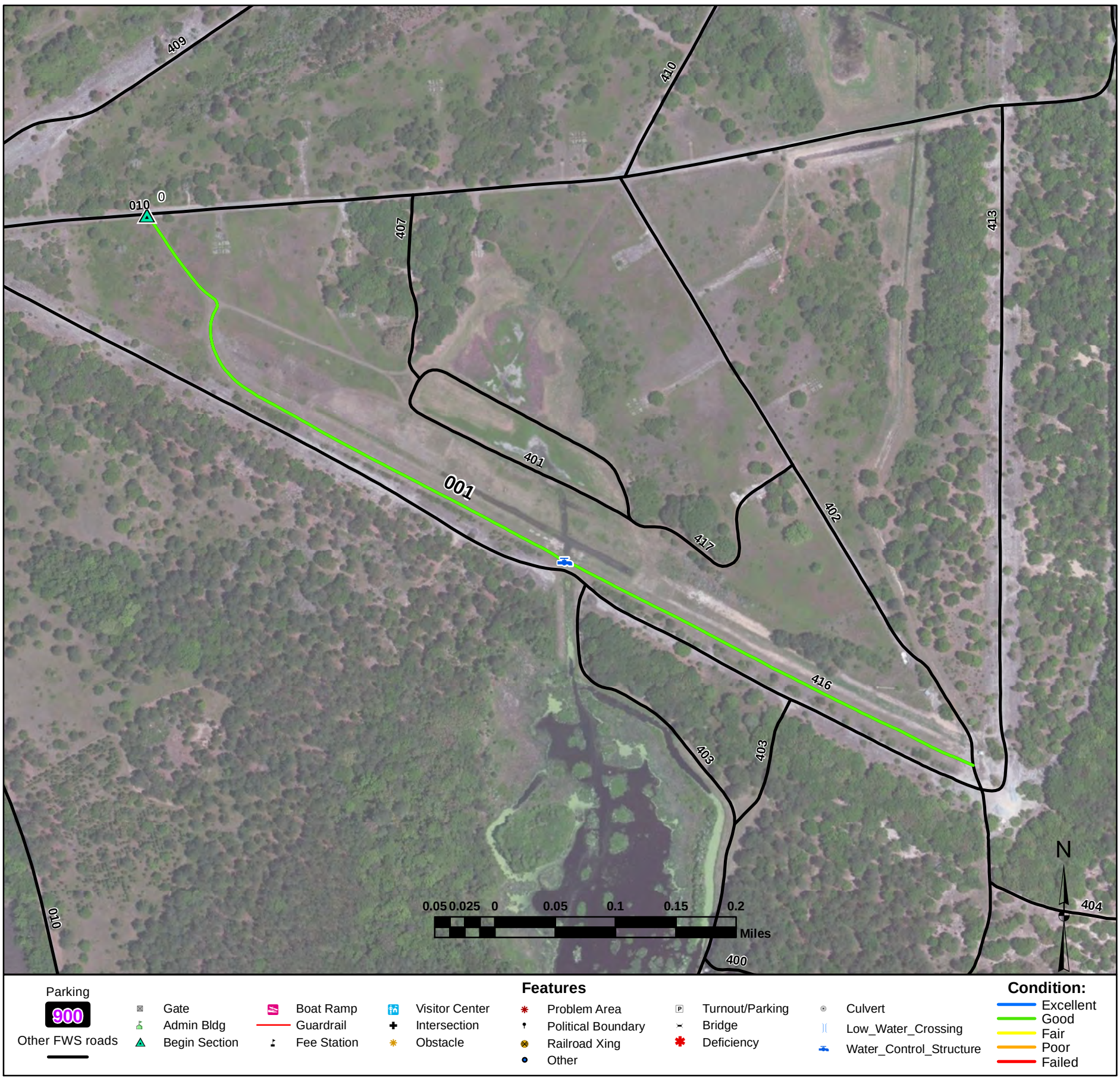
From Woody Pond Road (Route 414) to Auto Tour Route (Route 010)

Route Number: 415

Total Route Mileage: 0.62

Asset Number	10061129				
Section Number	001				
Section Length (miles)	0.62				
Inspection Date	01-28-2011				
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	12				
Condition	Good				
Remaining Service Life (years)	5				
Estimated Cost to Repair	$1,000				
Current Replacement Value	$206,200				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.4						



South Snipe Exterior Road

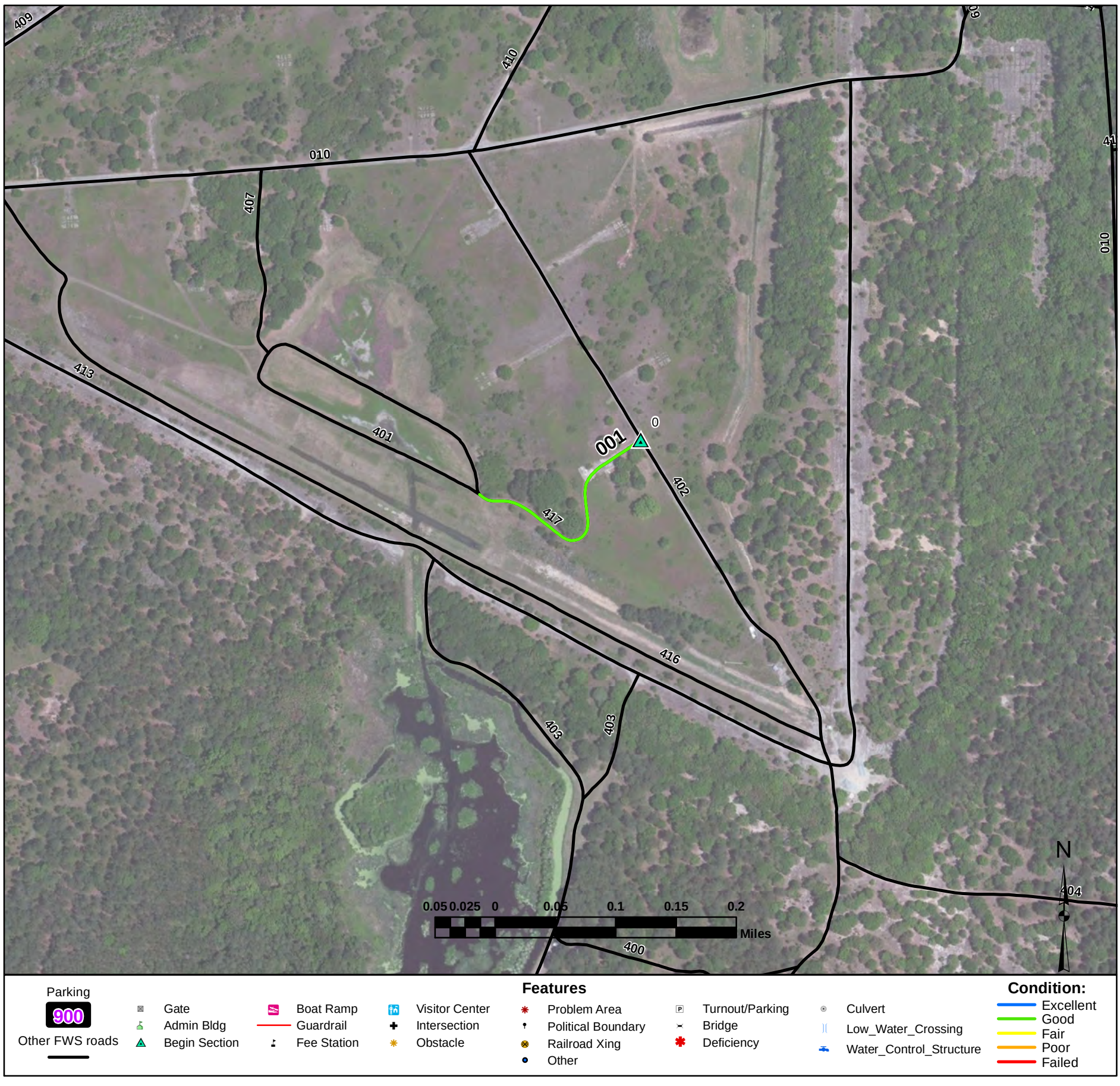
From Auto Tour Route (Route 010) to Pumphouse Road (Route 402)

Route Number: 416

Total Route Mileage: 0.75

Asset Number	10061147				
Section Number	001				
Section Length (miles)	0.75				
Inspection Date	01-28-2011				
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Good				
Remaining Service Life (years)	5				
Estimated Cost to Repair	$1,200				
Current Replacement Value	$247,300				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						
Water Control Structure	001-0.41						



East Snipe Exterior Road

From Pumphouse Road (Route 402) to Snipe Interior Road (Route 401)

Route Number: 417

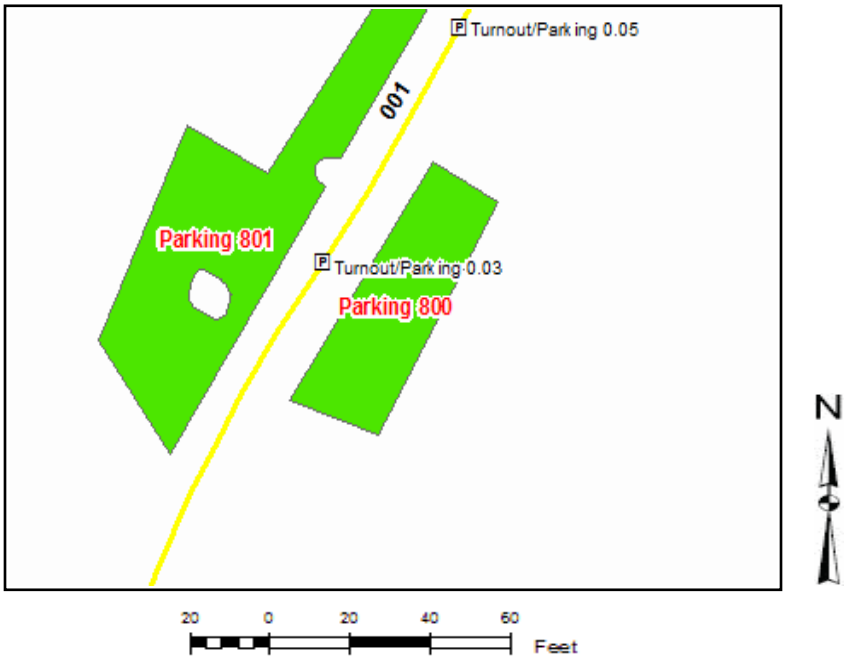
Total Route Mileage: 0.18

Asset Number	10061147				
Section Number	001				
Section Length (miles)	0.18				
Inspection Date	01-28-2011				
Surface Type	Native				
Number of Lanes	1				
Roadway Width (feet)	14				
Condition	Good				
Remaining Service Life (years)	7				
Estimated Cost to Repair	$300				
Current Replacement Value	$58,400				

Features	Mile Post	Features	Mile Post	Features	Mile Post	Features	Mile Post
Begin Section	001-0.0						

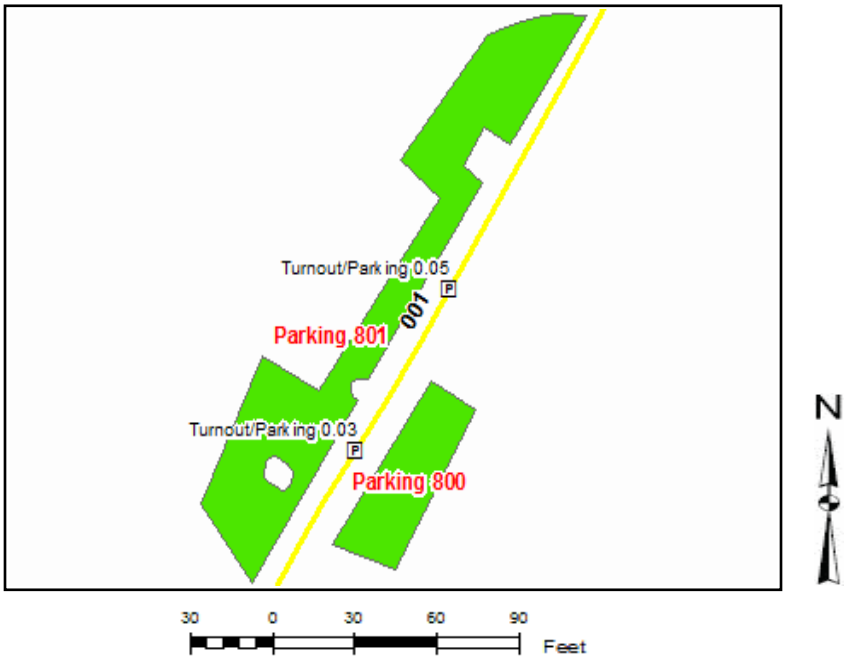
800: Headquarters Staff Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10054748	01/29/2011	Gravel	1,798	Good	300



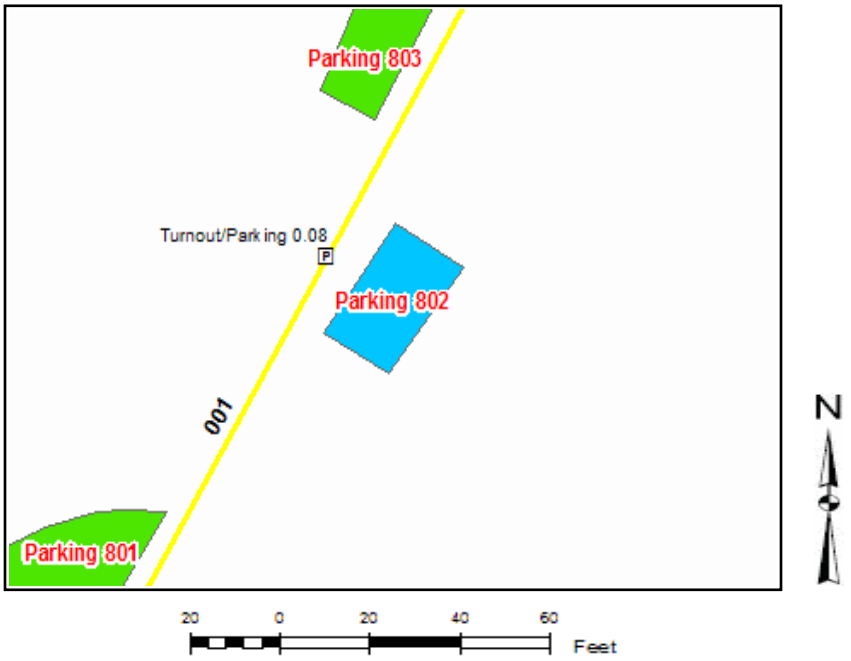
801: Shop Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/29/2011	Gravel	6,155	Good	900



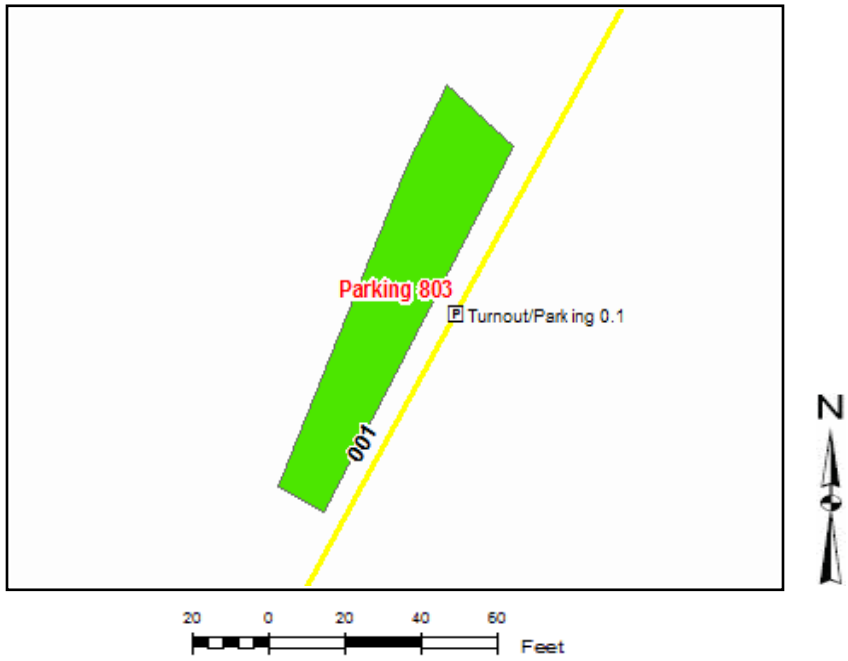
802: East LE Quarters Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037393	01/28/2011	Concrete	623	Excellent	0



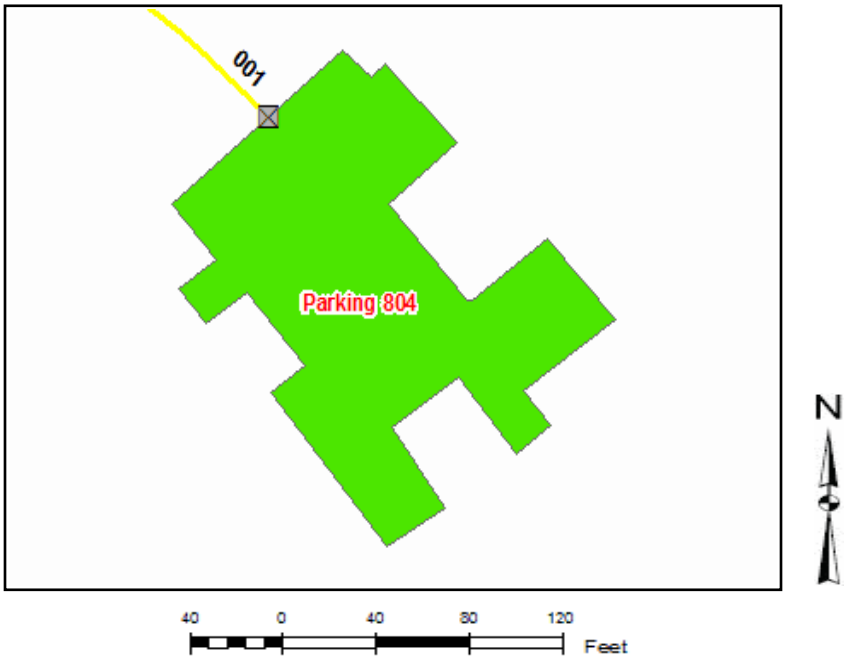
803: West LE Quarters Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037394	01/28/2011	Native	2,555	Good	400



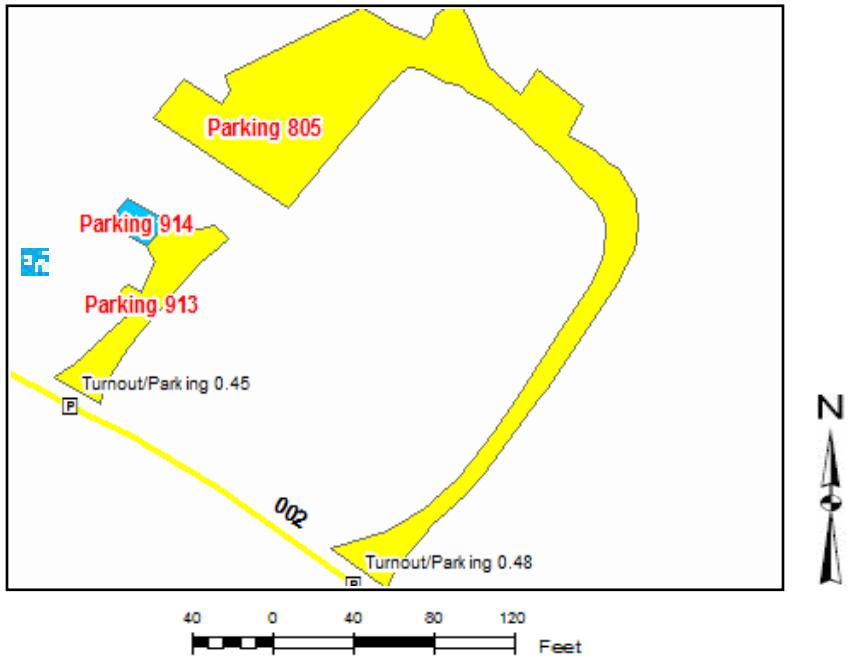
804: Boat House Area Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Native	21,567	Good	3,000



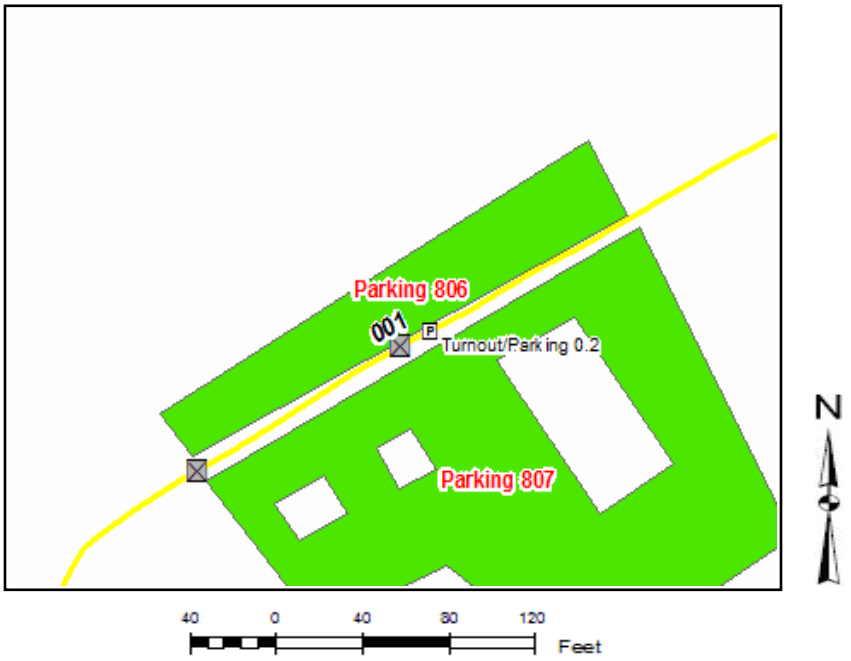
805: Ecological Services Office Employee Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Gravel	14,557	Fair	3,600



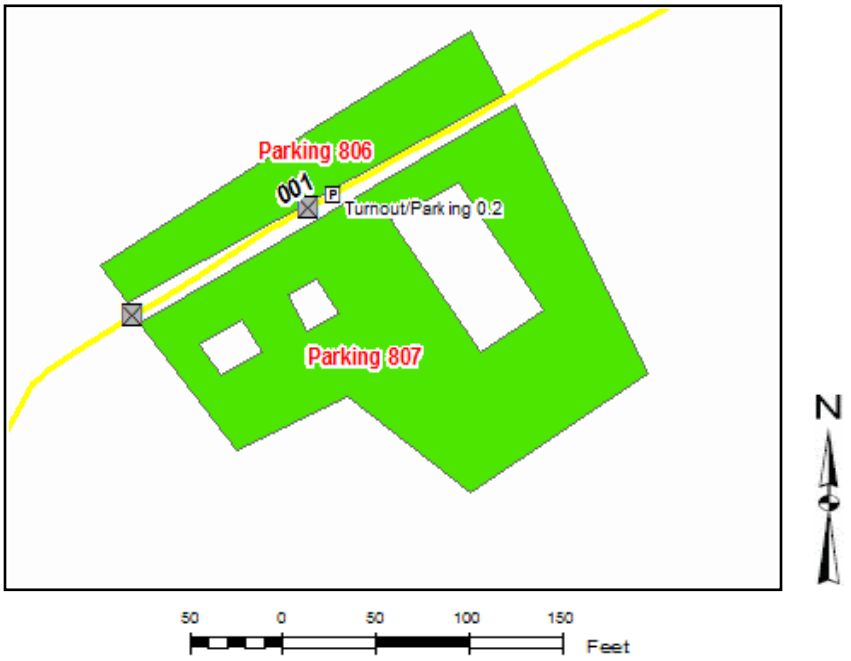
806: East Maintenance Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Native	9,150	Good	1,300



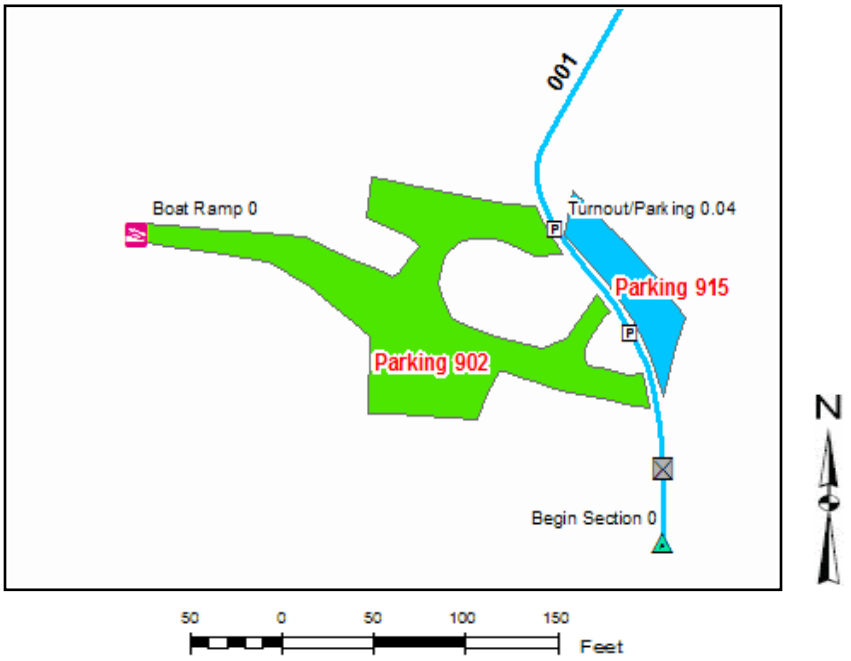
807: West Maintenance Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Native	31,579	Good	4,400



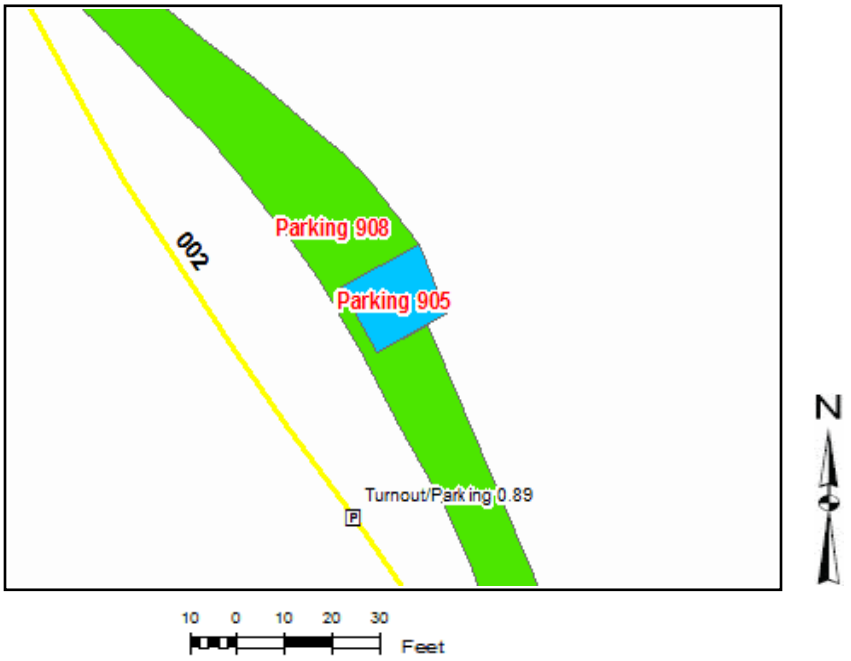
902: Entrance Boat Ramp Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037395	01/28/2011	Asphalt	14,221	Good	2,400



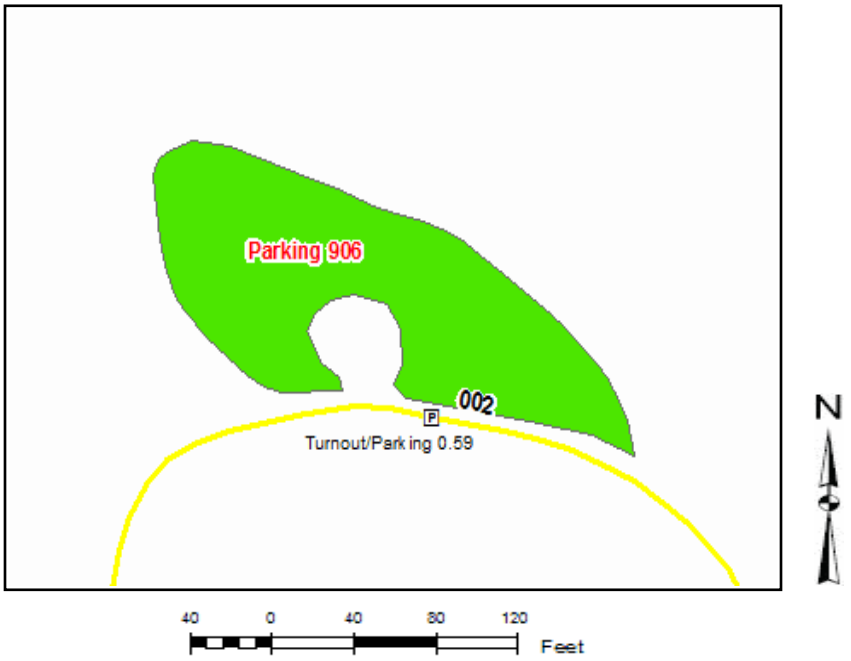
905: Woody Pond Handicapped Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037397	01/29/2011	Concrete	345	Excellent	0



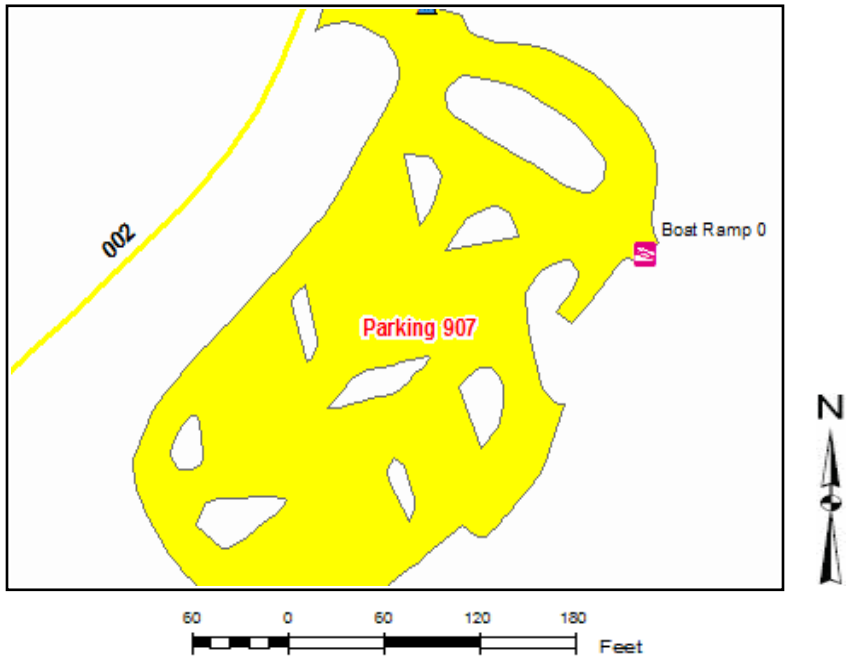
906: Thomas Landing Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037398	01/28/2011	Native	20,397	Good	2,800



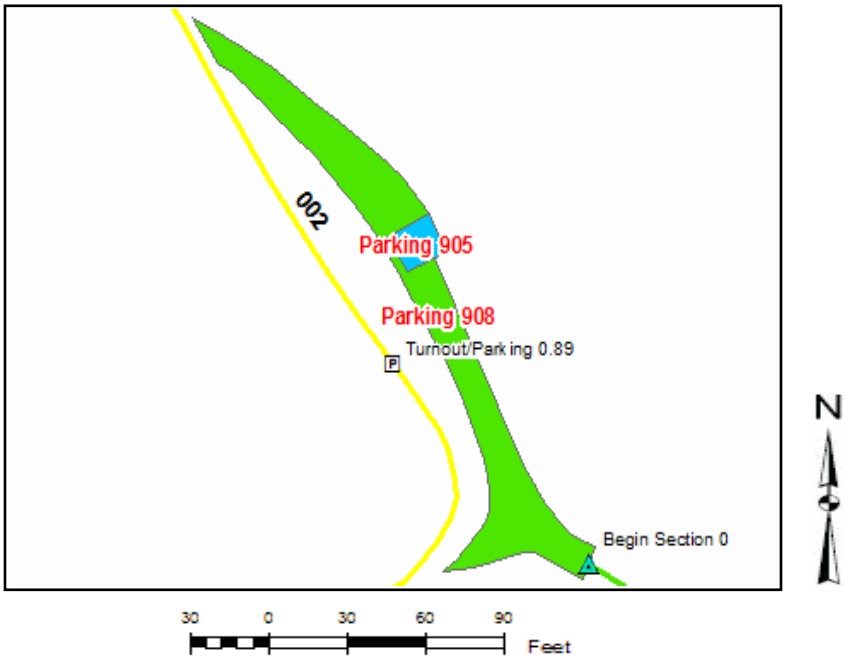
907: Barbour River Landing Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10015055	01/29/2011	Asphalt	76,980	Fair	61,200



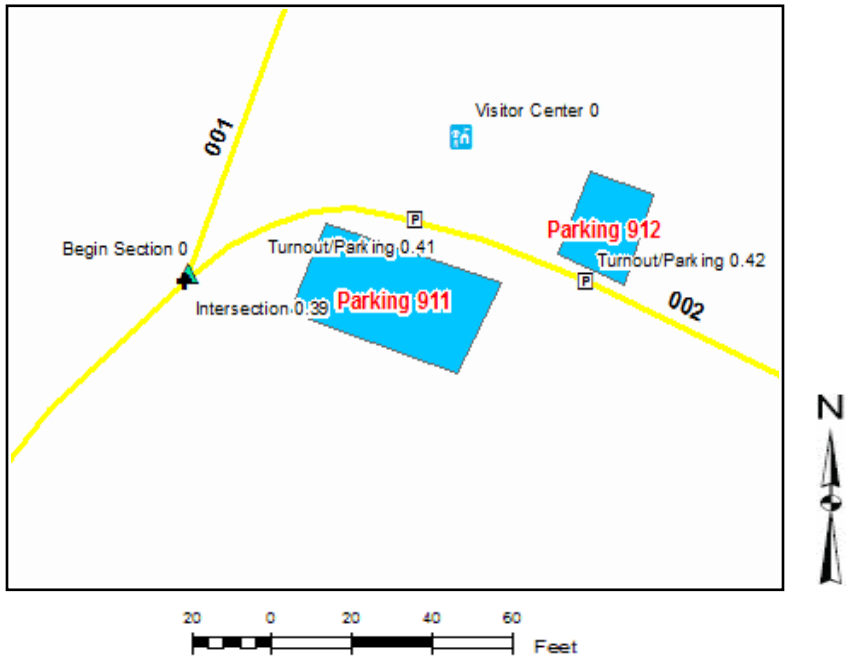
908: Woody Pond Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037400	01/29/2011	Gravel	4,719	Good	700



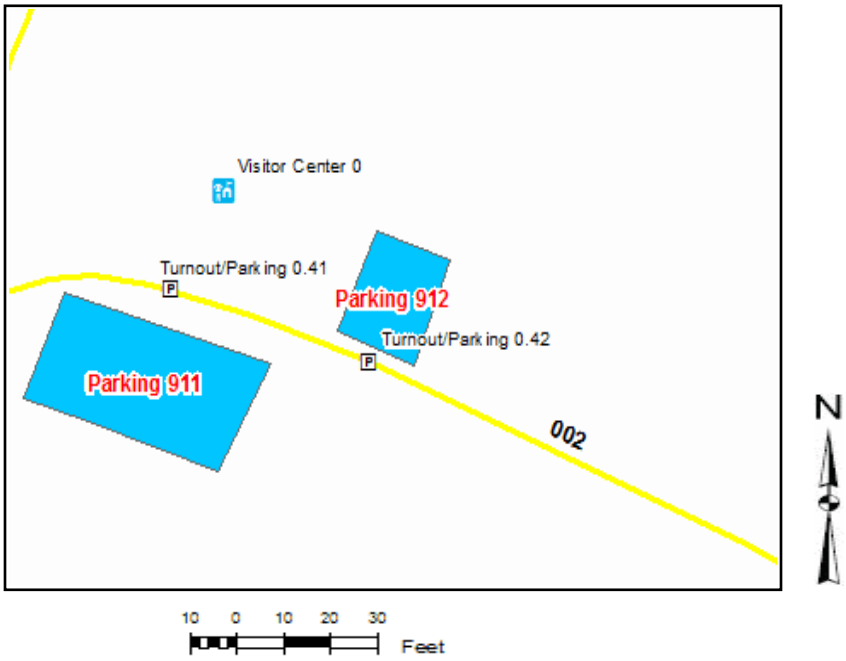
911: HQ/VC Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10054747	01/28/2011	Gravel	1,377	Excellent	0



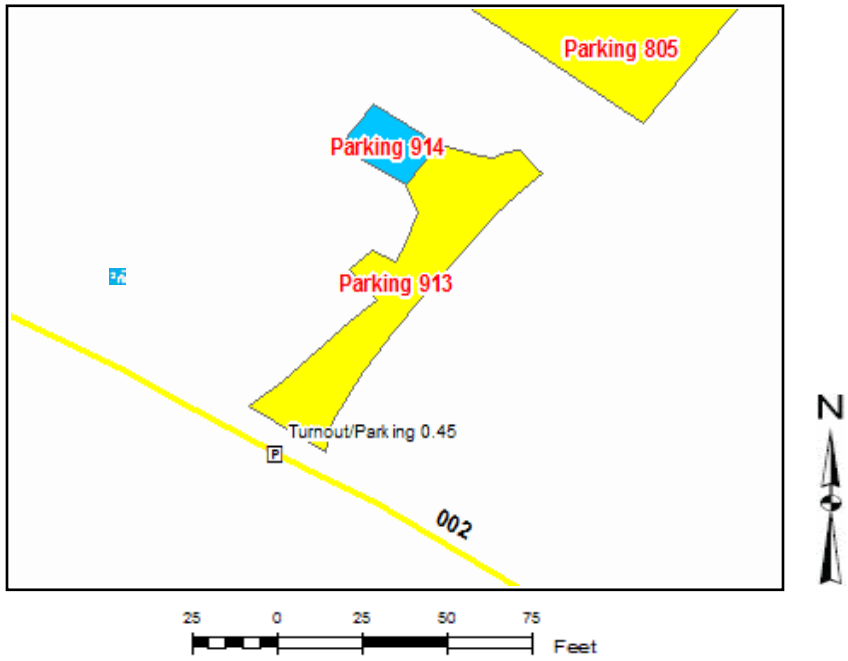
912: HQ/VC Handicapped Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10054747	01/28/2011	Concrete	493	Excellent	0



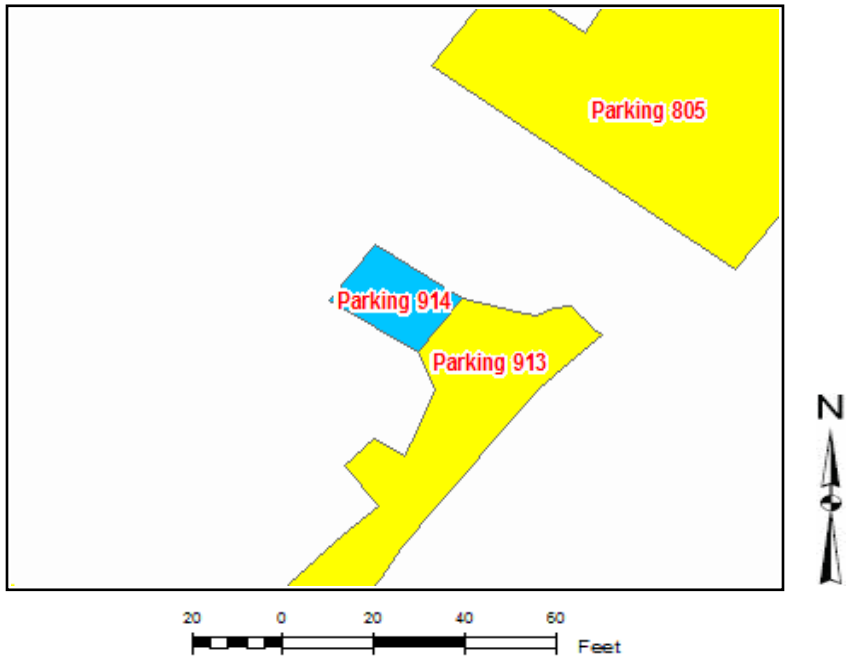
913: Ecological Services Office Public Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Gravel	2,331	Fair	600



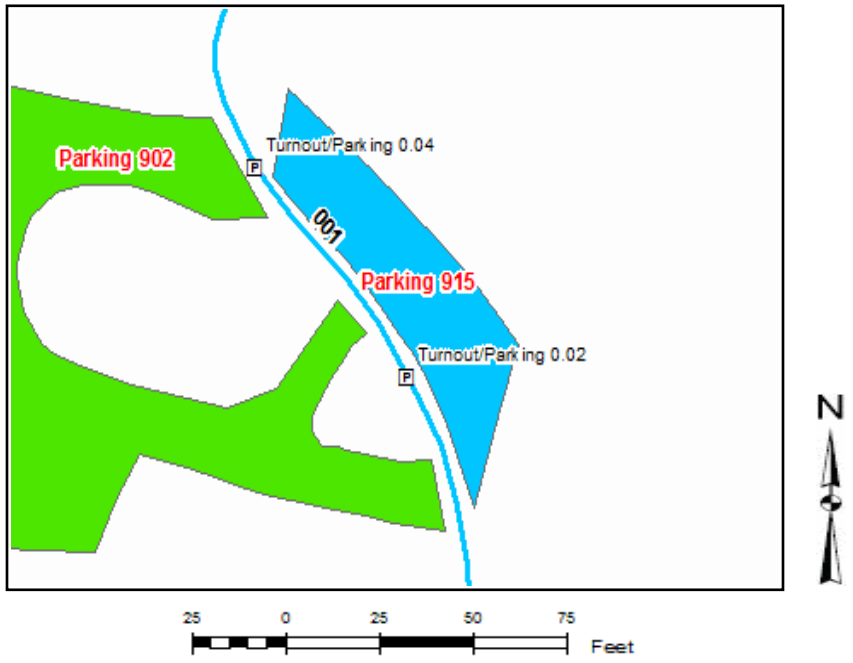
914: Ecological Services Office Handicapped Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Asphalt	430	Excellent	0



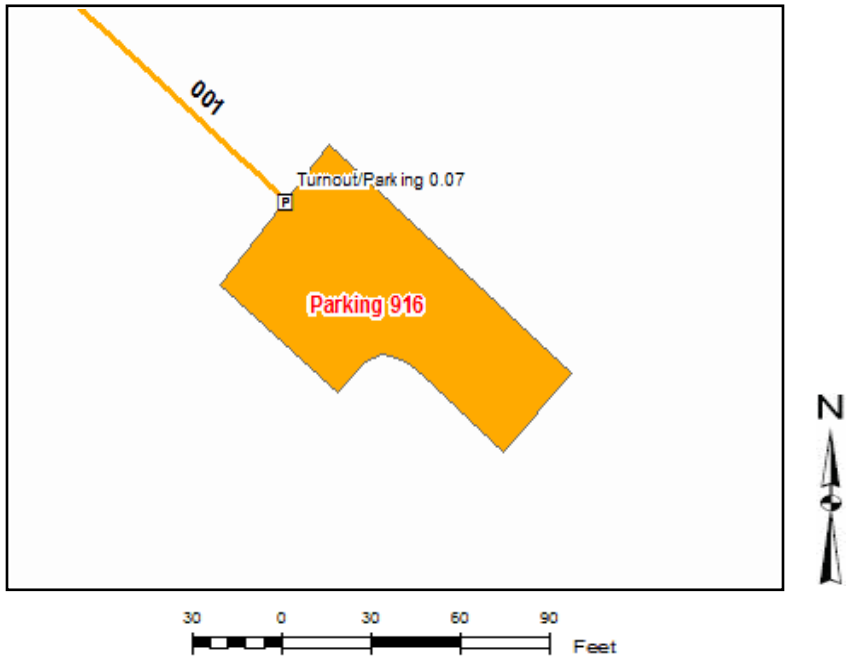
915: Entrance Kiosk Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
10037395	01/28/2011	Asphalt	2,761	Excellent	0



916: Crabber's Dock Parking

Asset Number	Date Visited	Surface Type	Area (Sq Ft)	Condition	Cost to Improve
	01/28/2011	Asphalt	6,475	Poor	28,800



Harris Neck Bridge Inventory					
Route #	Milepost	NBIS #	Sufficiency Rating	Functionally Obsolete	Structurally Deficient

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0765 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0767 - MP 0.37 - Begin Section 002

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0768 - MP 1.34 - Begin Section 003

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0769 - MP 2.32 - Begin Section 004

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0772 - MP 2.48 - Begin Section 005

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0773 - MP 3.33 - Begin Section 006

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 010 ROUTE NAME: Auto Tour Route

Photo # HANE_C4_0774 - MP 4.25 - Begin Section 007

ROUTE NUMBER: 101 ROUTE NAME: Thomas Landing Road

Photo # HANE_C4_0748 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 101 ROUTE NAME: Thomas Landing Road

Photo # HANE_C4_0749 - MP 0.42 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 103 ROUTE NAME: Barbour River Landing Road

Photo # HANE_C4_0776 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 103 ROUTE NAME: Barbour River Landing Road

Photo # HANE_C4_0778 - MP 0.47 - Begin Section 002

ROUTE NUMBER: 104 ROUTE NAME: Boat House Access Road

Photo # HANE_C4_0779 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 104 ROUTE NAME: Boat House Access Road

Photo # HANE_C4_0780 - MP 0.05 - Begin Section 002

ROUTE NUMBER: 200 ROUTE NAME: Crabber's Dock Access Road

Photo # HANE_C4_0722 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 300 ROUTE NAME: HQ/VC Administrative Access Road

Photo # HANE_C4_0728 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 301 ROUTE NAME: Volunteer RV Access Loop

Photo # HANE_C4_0735 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 400 ROUTE NAME: East Woody Pond Cut-Across Road

Photo # HANE_C4_0714 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 401 ROUTE NAME: Snipe Interior Road

Photo # HANE_C4_0702 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 402 ROUTE NAME: Pumphouse Road

Photo # HANE_C4_0708 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 402 ROUTE NAME: Pumphouse Road

Photo # HANE_C4_0709 - MP 0.56 - Begin Section 002

ROUTE NUMBER: 403 ROUTE NAME: East Woody Pond Road

Photo # HANE_C4_0710 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 403 ROUTE NAME: East Woody Pond Road

Photo # HANE_C4_0713 - MP 0.22 - Begin Section 002

ROUTE NUMBER: 404 ROUTE NAME: Powerline Road

Photo # HANE_C4_0715 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 404 ROUTE NAME: Powerline Road

Photo # HANE_C4_0725 - MP 0.77 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 405 ROUTE NAME: Gould Cemetery Access Road

Photo # HANE_C4_0716 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 406 ROUTE NAME: Southeast Cut-Across Road

Photo # HANE_C4_0718 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 407 ROUTE NAME: North Snipe Exterior Road

Photo # HANE_C4_0707 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 408 ROUTE NAME: Lucas Tract Access Road

Photo # HANE_C4_0727 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 409 ROUTE NAME: North Airfield Road

Photo # HANE_C4_0740 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 409 ROUTE NAME: North Airfield Road

Photo # HANE_C4_0743 - MP 0.99 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 410 ROUTE NAME: Goose Pond Road

Photo # HANE_C4_0744 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 411 ROUTE NAME: Bunker Road

Photo # HANE_C4_0747 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 412 ROUTE NAME: Bunting Loop Road

Photo # HANE_C4_0752 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 412 ROUTE NAME: Bunting Loop Road

Photo # HANE_C4_0753 - MP 0.10 - Begin Section 002

ROUTE NUMBER: 413 ROUTE NAME: South Airfield Perimeter Road

Photo # HANE_C4_0754 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 413 ROUTE NAME: South Airfield Perimeter Road

Photo # HANE_C4_0755 - MP 0.99 - Begin Section 002

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 414 ROUTE NAME: Woody Pond Road

Photo # HANE_C4_0756 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 414 ROUTE NAME: Woody Pond Road

Photo # HANE_C4_0760 - MP 0.21 - Begin Section 002

ROUTE NUMBER: 415 ROUTE NAME: Bluebill Levee Road

Photo # HANE_C4_0761 - MP 0.00 - Begin Section 001

FEATURES PHOTOGRAPHS

ROUTE NUMBER: 416 ROUTE NAME: South Snipe Exterior Road

Photo # HANE_C4_0697 - MP 0.00 - Begin Section 001

ROUTE NUMBER: 417 ROUTE NAME: East Snipe Exterior Road

Photo # HANE_C4_0701 - MP 0.00 - Begin Section 001

Accident Summary

Number of Accidents Reported	Timespan of Accidents	Injuries	Fatalities
0	No Accidents to Report	0	0

APPENDIX

TABLE 1 - GENERAL FWS ROAD FUNCTIONAL CLASSIFICATION	
Class I	Principal Refuge Road (Public Roads) - Routes that constitute the main access route, main auto tour route, or thoroughfare for refuge visitors. These routes are accessible by 2WD vehicles. Routes are numbered from 10 to 99.
Class II	Connector Refuge Road (Public Roads) - Routes that provide circulation within the refuge. These routes can also provide access to areas of scenic, scientific, recreational or cultural interest, such as overlooks, campgrounds, education centers, etc. These routes are accessible by 2WD vehicles. Routes are numbered from 100 to 199.
Class III	Special Purpose Refuge Road (Public Roads) - Roads that provide circulation within special use areas such as campgrounds or public concessionaire facilities or access to remote areas of the refuge. These routes may not be 2WD accessible. Routes are numbered from 200 to 299
Class IV	Administrative Access Road (Administrative Roads) - Routes intended for access to administrative developments or structures such as maintenance offices, employee quarters, or utility areas. These routes are accessible by 2WD vehicles. These routes may restrict access to the general public. Routes are numbered from 300 to 399.
Class V	Restricted Road (Administrative Roads) - Routes normally closed to the public, such as maintenance roads, service roads, patrol roads, and fire breaks. These routes may be open to the public for a short period of time for a special use, such as hunting access. These routes may not be 2WD accessible. Routes are numbered from 400 to 499.

A refuge road system contains those routes within or giving access to a refuge or other unit of the FWS that are administered by the FWS, or by the Service in cooperation with other agencies. The assignment of a functional classification (FC) to a refuge road is not based on traffic volumes or design speed, but on the intended use or function of that route

DESCRIPTION OF RATING SYSTEM

Rating Data is collected on four different surface types: Asphalt, Concrete, Gravel, and Native. The Utah LTAP Center's Remaining Service Life (RSL) system is used for all surface types. The RSL system is based on the Strategic Highway Research Program's (SHRP) Distress Identification Manual.

Asphalt Rating System

Data is collected on the following distresses and conditions:

- **Fatigue Cracking** - Interconnected cracks forming small irregular shapes.
- **Longitudinal Cracking** - Cracks running parallel with the roadway, in the direction of traffic.
- **Transverse Cracking** - Cracks perpendicular to the roadway, going across the lane or lanes.
- **Block Cracking** - Interconnected cracks forming large blocks.
- **Edge Cracking** – Cracks running along the edge of the pavement surface.
- **Patches** - Original surface repaired with new asphalt patch material.
- **Potholes** - Holes or depressions in the pavement.
- **Rutting** - surface depressions in the wheel paths.
- **Roughness –** Evenness of pavement for serviceability.
- **Drainage** – Ability of the road surface to drain water based on proper slope.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula

Fatigue, longitudinal, transverse, block, and edge cracking, along with patching and potholes are rated on a 0 - 9 scale (0 = no distress, 9 = maximum distress). The rating given is based on the extent and the severity of the distress. Rutting, roughness, and drainage are rated on a 0 - 3 scale (0 = excellent, 3 = poor). Each distress type has given Remaining Service Life (RSL) values (in years) based on the rating for that particular distress. The distress with the rating resulting in the lowest RSL value is considered to be the governing distress. That value is then assigned as the RSL of the road segment.

Concrete Rating System

Data is collected on the following distresses and conditions:

- **Spalling of Joints** – Chipping, breaking, or cracking of slab edges
- **Joint Seal Damage** – Any damage or condition that enables materials or water to infiltrate into the joint from the surface.
- **Corner Breaks** – A portion of the slab separated by a crack that intersects the adjacent transverse and longitudinal joints, forming approximately a 45° angle to the direction.
- **Broken Slabs** – Faulting and/or cracking localized to individual slabs.

- **Faulting** – Difference in elevation across a crack or joint.
- **Longitudinal Cracking** – Cracks in the pavement running parallel to road.
- **Transverse Cracking** - Cracks in the pavement running perpendicular to the direction of traffic.
- **Patch Deterioration** – Faulting, settling, or cracking of previously placed patch
- **Map Cracking** – A series of cracks that extend only into the upper surface of the Slab

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula
The rating procedure for concrete pavement is the same as that for asphalt pavement described previously. Each of the distresses described above are rated on the same 0 – 9 scale. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Gravel and Native Rating System

Data is collected on the following distresses and conditions:
- **Cross Section (Crown)** - Roadway built so that the center is higher than the shoulder, to prevent water from pooling on roadway.
- **Roadside Drainage** - Roadside ditches and culverts to handle water flow and prevent pooling on the roadside.
- **Corrugations (Washboarding)** - Small trenches or holes developing perpendicular to the roadway.
- **Potholes** - Holes or depressions in the roadway.
- **Rutting** - Depressions running parallel with the roadway, in the wheelpaths.
- **Dust** - Amount of dust caused by traffic.
- **Loose Aggregate (Gravel Only)** - Loose gravel, typically piled up on the roadway edges or centerline.

A Condition Rating value is calculated for each homogenous pavement section, and can be up to 1 mile in length.

Rating Index Formula
The rating procedure for unpaved roads is the same as that for asphalt and concrete pavements described previously. Of the distresses described above, corrugations, potholes, rutting, and loose aggregate are rated on the same 0 – 9 scale previously mentioned. Cross section, roadside drainage, and dust are rated on the same 0 – 3 scale described for asphalt pavement. The governing distress is then determined and the RSL associated with that distress is assigned to the road segment.

Condition Descriptions by Surface Type

The following definitions are used to describe pavement condition for the various surface types. These are general guidelines for condition indications.

Asphalt

Excellent – Recently constructed or overlaid road where construction or overlay was performed correctly- No maintenance required. RSL = 19-20 years.

Good – Low extent longitudinal and transverse cracks. All cracks are 1/4" or less with little or no crack erosion. Patches are in good condition and applied correctly. Routine Maintenance recommended. RSL = 13-18 years.

Fair - Roads are in good structural condition with little or no fatigue cracking. Longitudinal, transverse, and edge cracking is at medium extent and severity. Block cracking is not extensive. Any patches are in good condition. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Road beginning to show signs of structural distress. Fatigue cracking is medium to high extent and medium severity. Cracking will be severe. Surface may have severe block cracking and show. Patches are in fair to poor condition. There is moderate distortion or rutting and occasional potholes. Rehabilitation recommended. RSL = 1-6 years.

Failed - Road is severely deteriorated. Signs of structural failure appear along with severe and extensive fatigue cracking, distortion, potholes, or extensive patches in poor condition. Reconstruction recommended. RSL = 0 years.

Concrete

Excellent - New pavement. No maintenance required. RSL = 19-20 years

Good - First signs of transverse cracking, patch or repair, more extensive pop-outs, or scaling. Sealing or routine maintenance recommended. RSL = 13-18 years.

Fair – Pavement has join or crack spalling, and/or faulting, along with cracking at corners with broken pieces. Any Patches are in fair condition and faulting is at a minimum. Preventative maintenance recommended. RSL = 7-12 years.

Poor - Joints and cracks are open 1 inch, spalled, or patched. Faulting is more severe. Rehabilitation recommended. RSL = 1-6 years.

Failed - Most slabs have failed structurally, and faulting is severe. Reconstruction recommended. RSL = 0 years.11-9

The following table shows the relationship between RSL and condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Asphalt and Concrete Pavements)								
	FAILED	POOR		FAIR		GOOD		EXCELLENT
RSL Years	0	1-3	4-6	7-9	10-12	13-15	16-18	19-20

Gravel and Native

Note - Native surfaces do not have a gravel layer.

Excellent - Newly constructed road that has been constructed properly with proper crown, drainage and gravel layer. Little or no distress. No maintenance recommended. RSL = 8-10 years.

Good - Crown, drainage provisions, and gravel layer are in good condition. Distress limited to traffic effects such as dust, loose aggregate, and low severity corrugations (wash boarding). RSL = 5-7 years.

Fair - Adequate drainage and crown through majority of roadway. Crown repair, ditch improvement may be necessary. Road has more severe corrugations and potholes. Preventative maintenance recommended. RSL = 3-4 years.

Poor - Travel at slow speeds is necessary. Additional gravel layer needed to carry traffic. Poor crown. Ditching is inadequate and rutting is extensive and severe. Rehabilitation recommended. RSL = 1-2 years.

Failed - Travel is difficult, and road may be closed at times. Rutting and Corrugations are very severe. Total Reconstruction of road is recommended. RSL = 0 years.

The following table shows the RSL values for gravel and native roads in terms of excellent, good, fair, poor, and failed condition.

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE (Gravel and Native Surfaces)					
	FAILED	POOR	FAIR	GOOD	EXCELLENT
RSL Years	0	1-2	3-4	5-7	8-10

NATIVE PRIMITIVE/IMPROVED RATING SHEET

Cross Section (Crown)*

Severity	Condition		Description
	No Defects	0	Crown 4-6" with no restriction of water flow from centerline to ditch.
	Minor Defects	1	Inadequate or inconsistent crown. Drainage to ditch may be restricted.
	Moderate Defects	2	Flat crown, drainage to ditch restricted.
	Major Defects	3	Reverse crown, bowl-shaped road, drainage on roadway

Rutting

Severity	No Defects	Extent (Length) Low <10%	Med 10-30%	High >30%
Low < 6"		1	2	3
Med 6-12"		4	5	6
High > 12"		7	8	9

Roadside Drainage*

Severity	Condition		Description
	No Defects	0	Wide, deep ditches (>4') with no restriction to water flow.
	Minor Defects	1	Adequate ditches (>2' deep), minor obstructions restrict water flow.
	Moderate Defects	2	Shallow, narrow and obstructed ditches. Minor erosion of road.
	Major Defects	3	No ditch, drainage on roadway with moderate to severe erosion.

Potholes

Severity	No Defects	Extent (Area) Low <10%	Med 10-30%	High >30%
Low < 6"		1	2	3
Med 6-12"		4	5	6
High > 12"		7	8	9

Dust

Severity	Condition		Description
	No Defects	0	No obstruction to sight distance.
	Minor Defects	1	Sight distance > 550'
	Moderate Defects	2	Sight distance 225'-550'
	Major Defects	3	Sight distance < 225'

Corrugations

Severity	No Defects	Extent (Length) Low <10%	Med 10-30%	High >30%
Low < 3"		1	2	3
Med 3-6"		4	5	6
High > 6"		7	8	9

* Crown and Drainage are not rated for roads that have no constructed crown or drainage. This applies to Native and Gravel roads.

GRAVEL RATING SHEET

Cross Section (Crown)

Severity	Condition		Description
	No Defects	0	Crown 4-6" with no restriction of water flow from centerline to ditch.
	Minor Defects	1	Inadequate or inconsistent crown. Drainage to ditch may be restricted.
	Moderate Defects	2	Flat crown, drainage to ditch restricted.
	Major Defects	3	Reverse crown, bowl-shaped road, drainage on roadway

Rutting

Severity	No Defects	Extent (Length) Low <10%	Med 10-30%	High >30%
Low < 1"		1	2	3
Med 1-3"		4	5	6
High > 3"		7	8	9

Roadside Drainage

Severity	Condition		Description
	No Defects	0	Wide, deep ditches (>4') with no restriction to water flow.
	Minor Defects	1	Adequate ditches (>2' deep), minor obstructions restrict water flow.
	Moderate Defects	2	Shallow, narrow and obstructed ditches. Minor erosion of road.
	Major Defects	3	No ditch, drainage on roadway with moderate to severe erosion.

Potholes

Severity	No Defects	Extent (Area) Low <10%	Med 10-30%	High >30%
Low < 1"		1	2	3
Med 1-3"		4	5	6
High > 3"		7	8	9

Dust

Severity	Condition		Description
	No Defects	0	No obstruction to sight distance.
	Minor Defects	1	Sight distance > 550'
	Moderate Defects	2	Sight distance 225'-550'
	Major Defects	3	Sight distance < 225'

Corrugations

Severity	No Defects	Extent (Length) Low <10%	Med 10-30%	High >30%
Low < 2"		1	2	3
Med 2-4"		4	5	6
High > 4"		7	8	9

* Crown and Drainage are not rated for roads that have no constructed crown or drainage. This applies to Native and Gravel roads.

Loose Aggregate

Severity	No Defects	Extent (Area) Low <10%	Med 10-30%	High >30%
Low < 1"		1	2	3
Med 1-3"		4	5	6
High > 3"		7	8	9

ASPHALT RATING SHEET

Fatigue Cracking

Severity	No Defects	Extent: Low 1 crack WP	Extent: Med 2 cracks WP	Extent: High >30% length
Low-Cracks < 1/4"		1	2	3
Med-Cracks 1/4-3/4"		4	5	6
High-Cracks > 3/4"		7	8	9

Edge Cracking

Severity	No Defects	Extent (Length): Low <10%	Extent (Length): Med 10-30%	Extent (Length): High >30%
0-6" from curb		1	2	3
6-18" from curb		4	5	6
> 18" from curb		7	8	9

Longitudinal Cracking

Severity	No Defects	Extent: Low 1 crack full length	Extent: Med 2 cracks full length	Extent: High >2 cracks full length
Low-Cracks < 1/4"		1	2	3
Med-Cracks 1/4-3/4"		4	5	6
High-Cracks > 3/4"		7	8	9

Block Cracking

Severity	No Defects	Extent (Length): Low > 15x15' squares	Extent (Length): Med 15-10' squares	Extent (Length): High <10x10' squares
Low-Cracks < 1/4"		1	2	3
Med-Cracks 1/4-3/4"		4	5	6
High-Cracks > 3/4"		7	8	9

Transverse Cracking

Severity	No Defects	Extent (ft between cracks): Low > 200'	Extent (ft between cracks): Med 200-50'	Extent (ft between cracks): High < 50'
Low-Cracks < 1/4"		1	2	3
Med-Cracks 1/4-3/4"		4	5	6
High-Cracks > 3/4"		7	8	9

Utility Cuts

Severity	No Defects	Extent (Length): Low <10%	Extent (Length): Med 10-30%	Extent (Length): High >30%
Low-Cracks < 1/4"		1	2	3
Med-Cracks 1/4-3/4"		4	5	6
High-Cracks > 3/4"		7	8	9

Drainage/Roughness/Rutting

Severity	Condition		Description
	No Defects	0	Wide, deep ditches with no obstructions, smooth ride, no rutting, no potholes.
	Minor Defects	1	Drainage may be obstructed, < 1" rutting, minor roughness.
	Moderate Defects	2	Poor drainage, 1-2" rutting, noticeable roughness, potholes < 6" wide.
	Major Defects	3	No drainage; > 2" rutting; potholes 6-12" wide create roughness requiring reduced speeds.

CONCRETE RATING SHEET

Spalling of Joints

Extent (% joints)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low Spalls < 3"	1	2	3
	Med Spalls 3-6"	4	5	6
	High Spalls > 6"	7	8	9

Broken Slabs

Extent (% slabs)

Severity	No Defects	Low <5%	Med 5-15%	High >15%
	Low-no more than 3 pieces, no spalling/faulting	1	2	3
	Med-broken into >3 pieces, spalling/faulting <1/4"	4	5	6
	High-4 or more pieces, spalling/faulting >1/4"	7	8	9

Transverse Cracks

Extent (% slabs)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low-Cracks < 1/8"; no spalling/faulting	1	2	3
	Med-Cracks 1/8-1/2"; spall <3", fault >1/4"	4	5	6
	High-Cracks > 1/2"; spall >3", fault >1/4"	7	8	9

Joint Seal Damage

Extent (%joints)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low <10% joint length	1	2	3
	Med 10-50% joint length	4	5	6
	High >50% joint length	7	8	9

Faulting

Extent (Length)

Severity	No Defects	Low <10%	Med 10-30%	High >30%
	Low < 1/2"	1	2	3
	Med 1/2-1"	4	5	6
	High > 1"	7	8	9

Patch Deterioration

Extent (Area)

Severity	No Defects	Low <10%	Med 10-30%	High >30%
	Low-no fault, no settle at perimeter	1	2	3
	Med-fault & settle <1/4" at perimeter	4	5	6
	High-fault & settle >1/4" at perimeter, cracked patch	7	8	9

Corner Breaks

Extent (% of slabs)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low-corner cracks, no spalling or faulting	1	2	3
	Med-crack slightly spalled & faulted <1/4"	4	5	6
	High-crack highly spalled & faulted >1/4"	7	8	9

Longitudinal Cracks

Extent (% slabs)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low-Cracks < 1/8"; no spalling/faulting	1	2	3
	Med-Cracks 1/8-1/2"; spall <3", fault >1/2"	4	5	6
	High-Cracks > 1/2"; spall >3", fault >1/2"	7	8	9

Map Cracks

Extent (Area)

Severity	No Defects	Low <10%	Med 10-20%	High >20%
	Low-small connected cracks, no spalling	1	2	3
	Med-connected cracks, no spalling	4	5	6
	High-large connected cracks with surface spalling	7	8	9

Deficiency Ratings With Associated Remaining Service Life

Asphalt Rating Sheet

Fatigue Cracking	
Distress Rating	Remaining Service Life
0	20
1	10
2	8
3	6
4	8
5	6
6	4
7	6
8	2
9	0

Edge Cracking	
Distress Rating	Remaining Service Life
0	20
1	12
2	10
3	8
4	10
5	8
6	6
7	8
8	6
9	4

Transverse Cracking	
Distress Rating	Remaining Service Life
0	20
1	14
2	12
3	10
4	12
5	10
6	8
7	10
8	6
9	2

Utility Cuts	
Distress Rating	Remaining Service Life
0	20
1	14
2	12
3	10
4	12
5	10
6	8
7	10
8	6
9	2

Longitudinal Cracking	
Distress Rating	Remaining Service Life
0	20
1	14
2	12
3	10
4	12
5	10
6	8
7	10
8	8
9	6

Block Cracking	
Distress Rating	Remaining Service Life
0	20
1	12
2	10
3	8
4	10
5	8
6	6
7	12
8	6
9	2

Drainage/Roughness/Rutting	
Distress Rating	Remaining Service Life
0	20
1	16
2	10
3	4

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE IN YEARS (Asphalt & Concrete Roads)

RSL	FAILED 0	POOR 1 - 6	FAIR 7 - 12	GOOD 13 - 18	EXCELLENT 19 - 20

Concrete Rating Sheet

Spalling	
Distress Rating	Remaining Service Life
0	20
1	15
2	12
3	10
4	12
5	10
6	8
7	10
8	6
9	0

Broken Slabs	
Distress Rating	Remaining Service Life
0	20
1	15
2	12
3	10
4	12
5	10
6	8
7	10
8	6
9	0

Transverse Cracks	
Distress Rating	Remaining Service Life
0	20
1	18
2	15
3	12
4	15
5	10
6	6
7	10
8	4
9	0

Joint Seal Damage	
Distress Rating	Remaining Service Life
0	20
1	16
2	14
3	12
4	14
5	10
6	8
7	12
8	8
9	6

Faulting	
Distress Rating	Remaining Service Life
0	20
1	15
2	12
3	10
4	12
5	8
6	6
7	10
8	4
9	0

Patch Deterioration	
Distress Rating	Remaining Service Life
0	18
1	16
2	14
3	12
4	12
5	10
6	8
7	10
8	6
9	0

Corner Breaks	
Distress Rating	Remaining Service Life
0	18
1	16
2	14
3	12
4	12
5	10
6	8
7	10
8	6
9	0

Longitudinal Cracks	
Distress Rating	Remaining Service Life
0	20
1	18
2	15
3	12
4	15
5	10
6	6
7	10
8	4
9	0

Map Cracks	
Distress Rating	Remaining Service Life
0	20
1	18
2	15
3	12
4	12
5	10
6	6
7	10
8	4
9	0

Deficiency Ratings With Associated Remaining Service Life

Native Primitive Improved Rating Sheet

Cross Section	
Distress Rating	**Remaining Service Life**
0	10
1	7
2	5
3	0

Rutting	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	5
4	7
5	4
6	3
7	4
8	2
9	0

Roadside Drainage	
Distress Rating	**Remaining Service Life**
0	10
1	8
2	4
3	0

Potholes	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	5
4	7
5	4
6	3
7	4
8	2
9	0

Dust	
Distress Rating	**Remaining Service Life**
0	10
1	8
2	6
3	2

Corrugations	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	7
4	6
5	5
6	5
7	4
8	3
9	0

SUBJECTIVE CONDITION RATING FOR REMAINING SERVICE LIFE IN YEARS (Gravel & Native Roads)

RSL	FAILED 0	POOR 1 - 2	FAIR 3 - 4	GOOD 5 - 7	EXCELLENT 8 - 10

Gravel Rating Sheet

Cross Section	
Distress Rating	**Remaining Service Life**
0	10
1	7
2	5
3	0

Rutting	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	5
4	7
5	4
6	3
7	4
8	2
9	0

Roadside Drainage	
Distress Rating	**Remaining Service Life**
0	10
1	8
2	4
3	0

Potholes	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	5
4	7
5	4
6	3
7	4
8	2
9	0

Dust	
Distress Rating	**Remaining Service Life**
0	10
1	8
2	6
3	2

Corrugations	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	7
3	7
4	6
5	5
6	5
7	4
8	3
9	0

Loose Aggregate	
Distress Rating	**Remaining Service Life**
0	10
1	9
2	8
3	7
4	8
5	7
6	6
7	5
8	3
9	0